BLUE BOOK

ESTABLISHED 1906

MARCH 1952

ASTE.

production

Special report on boring machines

CONTENTS ON PAGE 5

Only WARE builds all four

While it is true there are several builders of hack sawing machines and many builders of bond sawing machines, only MARVEL builds BOTH hack saws and band saws. The fact is that MARVEL manefacturers 35 models of 10 basic types of metal sawing machines which include the world's fostest automatic production saw, the world's largest giant hydraulic hack saws, the world's most versafile band saw and the most widely used small shop saws.

With intimate and broad field experience in all types of metal cutting-off equipment and 35 different sows available, it is obvious that MARYEL Field Engineers occupy a unique and exclusive position in the industry. They are eminently qualified to make expert and unbiased recommendations covering the type, size and model of metal sawing equipment best suited to individual requirements—the most efficient, most accurate, fastest, broadest in scope and the most economical.

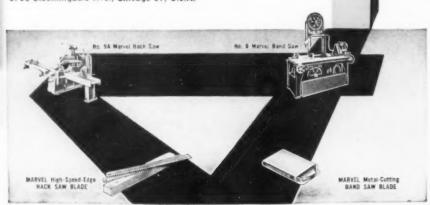
MARVEL is also the only manufacturer of both metal sawing machines and metal sawing blades. Because the efficiencies of both the machine and the blades are interdependent, each upon the capobility of the other, expert knowledge covering both saws and saw blades is essential to the proper appraisal of any specific sawing situation. Correct balance of cutting speed and blade life, feed pressure and blade tension are all potent factors in over-all performance. Here again it is the MARVEL field Engineer who is qualified to provide the comprehensive answer to your question. His job is to help you saw metal most efficiently—his services are available upon request—aratis.

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"HACK SAW BLADES





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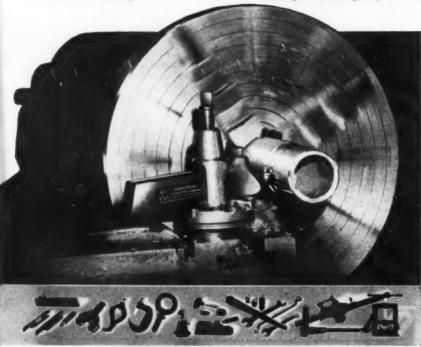
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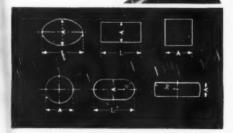
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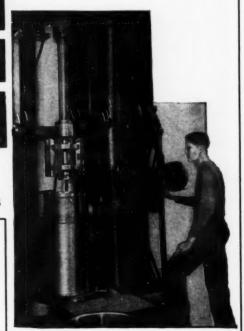
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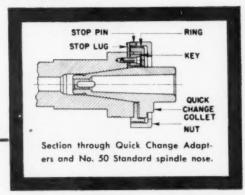
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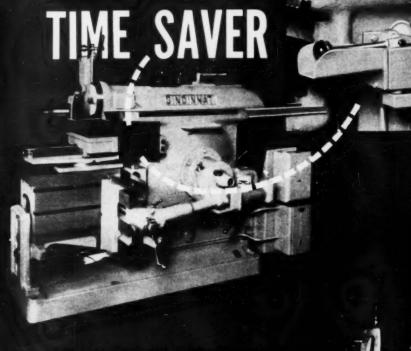
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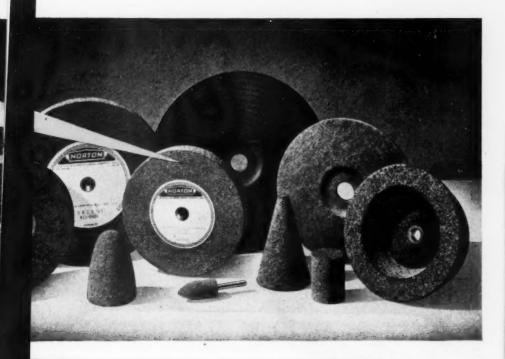
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A tap — or a gal
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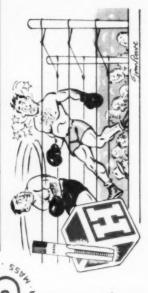


A is for ANGLE.
When not in condition
It's a mighty tough job —
Tappin — or fishin.

BATHCO



T is for TEMPER.
When you apply it with care
To a tap — or at home —
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At the right time and place.



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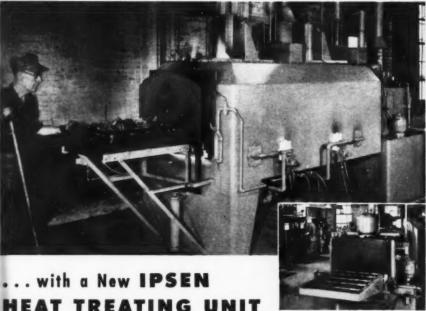
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Unloading End of Ipsen T-600 Heat-Treating Unit. Temperature and atmosphere control instruments and generator are shown in the background.

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But this oil did not prove satisfactory in actual use. It caused the gibs to corrode and the slides to stick. Operators found miking difficult. Downtime and rejects grew to disturbing proportions. Finally, to protect its automatics and restore its production efficiency, the plant decided to go back to Sunicut Cutting Oils and standardized on Sunicut 11.

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MACHINING PARTS for Ocean City's "90" Automatic Reel. Sunicut 11 does not corrode the bronze gibs of the automatics, minimizes carry-off, makes miking easy. A coolant tried as an "economical" replacement failed on all three counts.



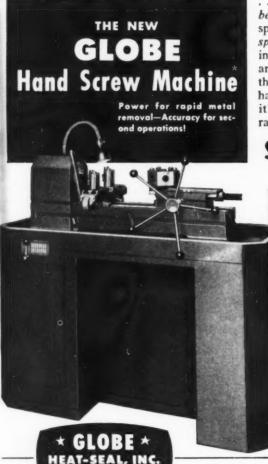
THIS AUTOMATIC REEL contains six types of metals...free-turning brass, aluminum, cold-rolled and stainless steel, phosphor and hardware bronze. Another Sunicut grade is used on the stainless steel.

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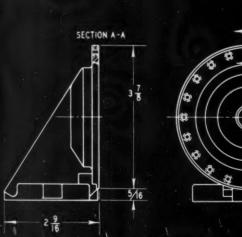
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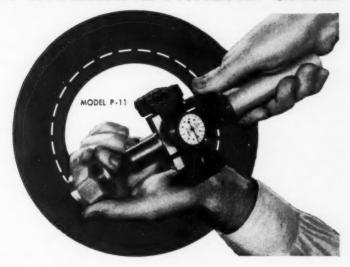




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Whether it's Grinding Wheels, Internal Wheels, Cut-off Wheels, or Mounted Wheels, Chicago Wheel is the name to remember.

For all your abrasive specialties, it's a "One-Stop Headquarters' that assures you top quality and maximum variety . . . backed by more than half a century of pioneering experience in the field.



CHICAGO GRINDING

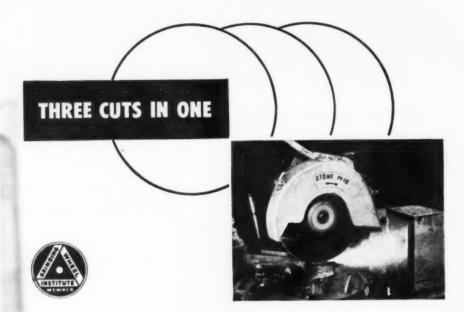
There is a Chicago Grinding Wheel for every portable tool operation.

Exclusive . . . new 79E Bond gives you a 5% to 10% boost in grinding and finishing output. It's impervious to water, acid, oil . . . tougher construction to resist breakage . . . lowers down-time.

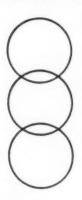
Offices in Principal Industrial Centers

CHICAGO WHEEL & Mfg. Co.

Dept. MT, 1101 West Monroe St., Chicago 7, Illinois



MANHATTAN CUT-OFF WHEELS



CUT down COSTS, because the number of cuts per wheel have been increased through the development of tougher rubber and resinoid bonds. Replacement wheels are not required as frequently.

CUT non-productive HOURS, since there is less down-time for wheel changes. Manhattan Cut-Off Wheels designed for specific work and specific materials give better cuts.

CUT out PROBLEMS. Manhattan supplies you with the right cut-off wheel for ferrous or non-ferrous castings, steel bars, pipe, structural shapes, stone or reinforced concrete, light gauge tubing, hardened or soft steel, heat-sensitive alloys, ceramics, or glass.



WRITE TO THE ABRASIVE WHEEL DEPARTMENT

MANHATTAN RUBBER DIVISION

RAYBESTOS-MANHATTAN, INC.

PASSAIC, N. J.

They're TUNGSTEN CARBIDE



They're PRECISION GROUND-FROM-THE-SOLID

Quality Engineered

BURS, REAMERS, END MILLS BORING BITS & TOOLS AND OTHERS BY ATRAX

ATRAX

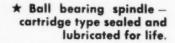
Write for our complete catalog



COMPANY

NEWINGTON IN CONNECTICUT

PROMPT DELIVERIES FOR PRECISION PLUS! These OVEL SURFACE GRINDERS



★ Table speeds variable from 10' to 90' per minute.

* Anti-friction ball or roller bearings used throughout.

* Hardened and ground cross feed and elevating screws.

* Hard chrome table ways for extra long life.

★ Trouble-free low-pressure hydraulic system used throughout.

Builders of Precision Grinders for 78 Years

 Work capacity
 6" x 18" 8" x 24"

 Transverse table travel
 634"
 9"

 Longitudinal table travel
 20"
 27"

 Grinding wheel size
 10"
 12"

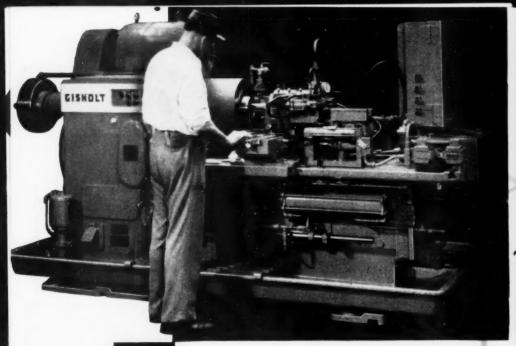
 Capacity under wheel
 12"
 11"

Write for BULLETIN MT-32

OVEL PRECISION GRINDERS

BENTON HARBOR - MICHIGAN

DRILL GRINDERS — UNIVERSAL CUTTER & TOOL GRINDERS — HYDRAULIC & HAND FEED SURFACE GRINDERS



SIMPLIMATICS cut machine time 50% cut man hours 75%

The way you can slash costs with the Gisholt Simplimatic often surprises some of the most experienced production men.

Here's a big shop which found that 8 Simplimatics could take over the job done on 16 other machines. And it takes only 4 operators instead of 16 to turn out the volume of parts required.

Not the least in the cost picture is the machine itself. For the basic Simplimatic

design permits you to individualize the machine to a high degree to solve many different problems. Thus, for many jobs you can have all the advantages of a special machine merely with special tooling. Yet it's all done on a Standard Simplimatic—at far lower cost.

The importance of lower costs these days makes it important for you to get all the facts about Simplimatic Automatic Lathes.

The GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface funishing and balancing of round and partly round partly round partly round see problems are succomed here.

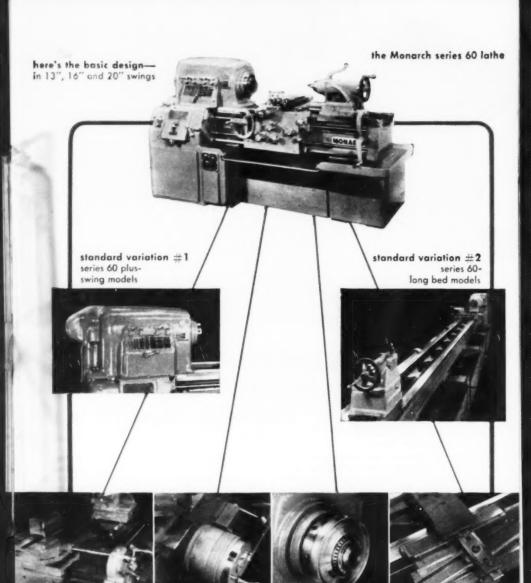




In producing these tool joint pins and boxes, the 8 Simplimatics work in pairs with fully automatic operation one man can easily tend two machines. Ash about the many different arrangements possible on the Standard Simplimatics with platen table, vertical head, etc.

GISHOLT MACHINE COMPANY, Madison 10, Wisconsin

TURRET LATHES . AUTOMATIC LATHES . BALANCERS . SUPERFINISHERS . SPECIAL MACHINES



ball turning rest

micro-gage dial

spindle nose chucks and collets

anti-friction bearing taper attachment

for Small Lot Production and Maintenance

This, of course, gives you only a partial idea of the great versatility of the Monarch Series 60—available both as an Engine and a Toolmaker's Lathe. But it does indicate the ease with which the competent basic model can be customized to meet your requirements beyond those served by our standard design. It doesn't show all the accessories—the real inside story of Monarch specifications and construction—or the Monarch Heavy Duty Line with added power and swing. For the whole story, you'll want the illustrated, detailed Booklets that we have prepared. Just fill in the handy coupon, indicating your special interests . . . The Monarch Machine Tool Company, Sidney, Ohio.

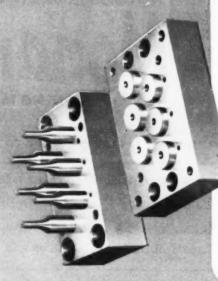


FOR A GOOD TURN FASTER . . . TURN TO MONARCH

Gentlemen: Pleas	MACHINE TOOL COMPANY, SIDNEY, OHIO se send me without obligation the following plete Booklets.
☐ Bool	clet No. 1113-Monarch Series 60 Lathes
☐ Book	tlet No. 1208—Monarch Heavy Duty Lathes
NAME	TITLE
COMPANY	TITLE
	TITLE

TSHIS

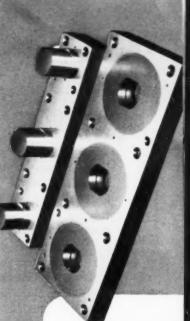
SKILLED MAN HOURS



Each special R-B retainer plate is made from tool steel and is precision ground after hardening. They will hold as many interchangeable R-B punches and dies as your operation requires. Ball locks are built into these special plates at designated locations providing the same radial and vertical locking feature found in standard R-B retainers.



SPECIAL RETAINER PLATES



You can gain all the advantages of R-B standard punches and dies on those jobs where small center to center hole spacing in work precludes the use of standard individual R-B retainer plates. For, R-B will make special retainer plates holding multiple punches and dies according

The use of multiple hale retainer plates saves you skilled man hours in die construction and maintenance. Resultmore work completed each day by your skilled men and increased production profits for you.

Any shape, size, or number of punches and die buttons can be incorporated in the designing of your R-B special retainer plates. For the full story—on how you can "Slash Skilled Man Hours" in die design, construction and operation—ask for 52 page R-B catalog.

ALLIED PRODUCTS CORPORATION RICHARD BROTHERS DIVISION

DEPT. 62 . 12621 BURT ROAD . DETROIT 23, MICHIGAN

Please send me your 52-page free catalog.

NAME

TITLE

COMPANY

ADDRESS

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Alled Produced in ALLIED'S FOUR PLANTS HARDENED AND PRECISION GROUND PARTS • STANDARD CAP SCREWS • SPECIAL COLD FORGED PARTS • SHEET METAL DIES • ALLITE DIES CAST OF ZINC ALLOY • JIGS • FIXTURES



DEBURRING and removing sharp edges on rough cast surfaces is short work when you use files and cutters of the right shape . . driven at correct speeds . . . tools last longer, too.



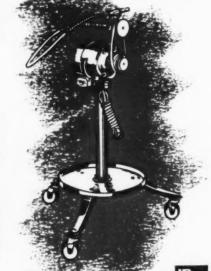
FILING and finishing metal patterns with Haskins equipment gives you precision craftsmanship.
.. quality production. Wide selection of files and cutters meets all job requirements.



GRINDING rough castings is another tough job made easy with Haskins dependable power. Because you handle only a light handpiece, not a heavy motor, work is faster, labor cost lower.

On Work

WORK WITH



SUSPENDED, BENCH OR PEDESTAL

WELD BLENDING calls for Haskins power with drum and disc sanding attachments for smooth, flawless seems.



POLISHING precision molds to mirror-like finish assures constant, pit-free molding. Here an MS4 machine with special felt bob does the job better—with less operator fatigue.



HI-SPEED GRINDING for more accurate and finer finished die cuvities. Special offset head is typical of Haskins special engineering of grinding and finishing attachments.

like this...

You can take the work out of jobs like these in your plant when you put Haskins flexible shaft equipment to work—stepping up production . . . quality . . . doing the job easier at lower cost. For Haskins brings you profit-making advantages like these: constant power for sustained operation, even on heaviest duty . . . handling only a light handpiece, not a heavy motor, operator fatigue is reduced, work standards are higher . . . higher speeds mean better work, faster, with longer tool life . . . multispeed design gives you one machine capable of many jobs.

Write us today for recommendations on those tough jobs of yours. R. G. Haskins Co., 2645 W. Harrison St., Chicago 12, III.



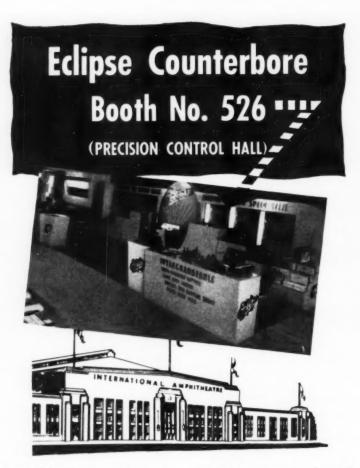


BUFFING a finish to high luster is another quality job done better by Haskins. Right angle head and right buff allow the operator better control for better work on lacquered metal or wood surfaces.

See Us at the Tool Show!

BOOTH 333

Let us show you how the right combination of Haskins power, speed, attachments and accessories can do your job faster, easier —at lower cost.



Here's an exhibit number to remember—and a cordial invitation to visit us at the ASTE Exposition. We'll be fully manned with factory executives, engineers and sales personnel to chat or "talk shop" with YOU.

In addition to a complete line of famous Eclipse products, we have a surprise, even for you veteran tool users. We're not announcing our latest product development until the Exposition—ask us about it there!

DETROIT 20, MICHIGAN

HOW DUPLICATE TOOLING... AND A FASTERMATIC...



doubled production!

The time and unit cost for machining these cast iron pulley flanges were cut in half when the Fastermatic with double tooling took over the job.

Just three turret faces were needed to complete the machining and threading on each part. Therefore, tooling is repeated on the other three turret faces so that two parts are finished with each revolution of the turret. Production is doubled over the old method . . . time lag is cut to a minimum . . . there's twice the time between tool changes.

This smart setup illustrates one of the many ways Fastermatic Automatic Turret Lathes give you greater efficiency and lower costs on a broad range of jobs. And one operator can usually handle two or more machines. Ask for the facts.

GISHOLT MACHINE COMPANY Madison 10. Wisconsin

Floor-to-floor time for these puller flanges is down to 1.75 minutes. Duplicate tools and collapsing taps on the turret rough and finish the hore, chamfer and cut threads. Front and rear slides shave the angle and form the radius

on the O.D.

Gisbolt 1F Fastermatic Automatic Turret Lathe

THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES . AUTOMATIC LATHES . SUPERFINISHERS . BALANCERS . SPECIAL MACHINES

.0001" ACCURACY DRESS COMPLEX FORMS in one continuous motion with J&S Fluidmotion* DRESSERS

<u>Dresses</u> Two Angles <u>Tangent</u> to Radius <u>in one Continuous</u> Motion!

Adaptable to All Types of Surface and Cylindrical Grinders using 36" dia. Wheels.

J & S Elevator Diamond Extension

J. & S. Adjustable Angle Ramp

-DELIVERY-

For March-3 weeks

F.O.B. East Orange, N.J.

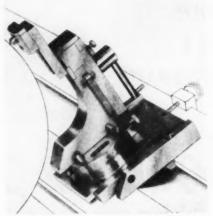


Photo shows how the J & S Model "E" Dresser is applied to cylindrical grinder with inclined table, wheels up to 19" diameter. Two standard J & S attachments (shown above) easily adapt dressers to all cylindrical grinders having flat or inclined tables.

You can substantially increase production rates of your grinding machines by reducing time-off for form dressing. For fastest possible dressing J & S "Fluidmotion" Dressers are the answer. With "Fluidmotion" only one setting is necessary for dressing two angles tangent to a radius—using one handle in one continuous motion.

Resulting forms are clean, precise—angles and radii flow into each other. On high production set-ups, sharp contours without tool or chatter marks are consistent

to .0001" accuracy.

With today's tight supply of experienced GRINDERS—and ever-increasing demand for faster production—it will pay you to investigate J & S "Fluidmotion" Dressers. They are the simplest, fastest dressers you can buy—even beginners can use them to boost production rates of your cylindrical and surface grinders.

WRITE FOR FREE DRESSER CATALOGUE!



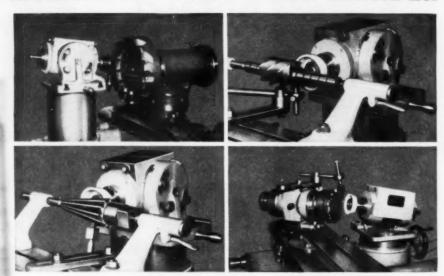
* Reg. U.S. PAT. OFF.

J & S "Fluidmotion" Dressers are one of the popular J & S "Machine Shop TIME SAVERS", along with J & S "All Purpose" JAW CLAMPS as well as SPECIAL PUR-POSE FORM TOOLS of SOLID CARBIDE or HIGH SPEED STEEL.

VISIT BOOTH NO. 1922 AT ASTE SHOW IN CHICAGO ON MARCH 17TH TO 21ST.



MODERNIZE YOUR TOOL GRINDER



THE NEW POPULE SUPER PRECISION 1 HP, 3600 RPM MOTORIZED TOOL AND CUTTER GRINDER HEAD

With Angular Adjustment In A Vertical Plane

Specify this new and better motorized Spindle on your next tool and cutter grinder.

Replace less effective, less versatile heads on your present grinders.

This totally enclosed POPE Spindle with scaled-in lubrication has the radial and axial rigidity to make wheels cut faster - spark out quicker.

It produces the kind of cutting edge on your tools that stands up and cuts longer.

It is easy to install.

It reduces set-up time.

It reduces grinding time.

Ask us for a quotation

No. 82



POPE MACHINERY CORPORATION

ESTABLISHED 1920

261 RIVER STREET . HAVERHILL, MASSACHUSETTS BUILDERS OF PRECISION SPINDLES

THE NEW

.. for precision work





"Roll-Lock" Flange Type Chuck

Shown to the right are two of the many applications in turning, grinding or inspection operations. "Roll-Lock" Flange Type Expanding Arbor and Tool Chuck being used in a finish grinding machine for holding the work and grinding tool. ""Roll-Lock" is a trade mark of Scully-Jones and Company.

"ROLL-LOCK"*

"Roll-Lock" Mandrels, Arbors and Chucks use a new chucking method for holding work or tools. This method takes advantage of the elastic properties of meta.

When a very little turning force is applied to actuating ring or cone, he powerful wedging action of rollers expands or compresses the chucking surface to asshrink fit. This permits maximum torque and thrust to be transmitted, assuring accuracy often less than .0001". "Roll-Lock" Chucking Tools are engaged or disengaged quickly and easily. Yet the shrink fit cannot be loosened by reversing the rotation of the tools or by shock and vibration.



WRITE FOR BULLETIN No. 17-50

giving detailed description and technical data on these and other "Roll-Lock" Chucking Tools.

SCULLY JONES

1907 S. Rockwell St., Chicago 8, III.

YOU GET LOW COST FAST ACCURATE PRODUCTION WITH OUR STANDARD AND SPECIAL TOOLS

March, 1952



Cut expensive set-up time from hours to a few minutes with the revolutionary TREE taper boring tool. You can use it on your present milling machine, jig borer or boring bar. Write today for complete information. In addition to boring taper holes this tool can be used for—



 Straight boring . . . as shown at left used as offset boring tool.



 Facing . . . up to 10" in diameter.



 Outside Turning . . . either straight or tapered up to 8" with extension bar.





COLLET

CLOSER

TREE UNIVERSAL MILLING HEAD ATTACHMENT . . .

All Angle Milling, Drilling & Boring. Compact Design, 34" Collet Capacity, 4" Quill Travel. Power Feed Eight Speeds— 140-3500 RPM or 210-5200 R.P.M. Hardened & Ground Spindle & Quill. Enclosed Micrometer. Depth Stop.

For Full Information - Write Dept. B

TREE TOOL and DIE WORKS

1600 Junction Ave. Racine, Wisconsin Export Address:
STATES TRADING CO.,
401 BROADWAY,
NEW YORK 13, N.Y.
Cable Address: "STRADESO" N.Y.



HERE'S WHY: Heavily ribbed, smoothly machined cast-iron top provides a "surface plate"... Table equipped with lock-leveling screws... Steel shelf in sturdy steel welded

base... Steel tool box shelf, guard rail, and drawer with lock... Vise and individual light can be easily attached... Bench is portable. Write for details.

THE CHALLENGE MACHINERY CO.

Office, Factories, Show Room



Grand Haven, Michigan **CLEVELAND DIALMATIC**

Single Spindle

Bar and Chucking Automatics

MODEL AB 2½" and 3" bar capacity; 6" chucking capacity. CLEVELAND

The most VERSATILE single spindle

automatic in the field:

This New Bulletin Gives Complete Details. Write for Your Free Copy



Find out now how much you can save on your parts production with the Cleveland Dialmatic. Ask Cleveland engineers to submit a direct proposal with production estimates on your work. There is no obligation.

Remember: Clevelands Cut Costa

Incorporating many important advancements in screw machine design, the Cleveland *Dialmatic* sets new standards of economy for full automatic production of short-run jobs formerly produced only on hand-operated machines.

Electric Feed Drive pre-selects highly accurate feed rates for all five turret tools, simply by positioning dials on the control panel. No cam changes.

112 Spindle Speeds from 24 to 1820 r.pm. provide efficient cutting speeds for all metals — all types of tools. Four automatic speeds available through hydraulically shifted clutch and two-speed spindle motor.

Quick Set-Up, provided by Electric Feed Drive, further shortened by universal camming; patented Cleveland quick-change collet; hand crank stock feed adjustment; and many other time-proved Cleveland features.

Converts from Bar Machine to Chucker in 30 minutes by substituting a low-cost 6" power chuck attachment for the stock feed group in the spindle.

THE CLEVELAND AUTOMATIC MACHINE COMPANY

4934 Beech Street Cincinnati 12, Ohio sales offices: CHICAGO CLEVELAND . DETROIT HARTFORD . SO. ORANGE

Manufacturers of a Complete Line of Single Spindle Automatic Screw Machines and High Pressure Hydraulic Die Casting Machines



ORIGINATORS OF WIRE TYPE PLUG GAGES

WRITE for the 1952 Van Keuren Catalog and Handbook No. 35. It contains specifications and prices on wire type plug gages and also Taper Insert Plug Gages up to 2.500" diameter. SPECIFY VAN KEUREN Wire Type Plug Gages on your drawings for all sizes from .010" to .500" diameter.

Taper Insert Plug Gages in this range are a waste of time and money.

RECOMMENDED MATERIALS

High Speed Steel

Stocked in sizes from .010 to .050". Available at no extra cost.

Chromium Alloy Tool Steel

Standard for sizes .051 to 1.000".

Hard Chromium plate

5 times the life of steel at 50% additional cost. Available in sizes from .016 to 1.000".

VK Carboloy

50 times the life at 5 times the cost of steel. Recommended for close tolerance work and long runs. Available in sizes from .016 to .500" dia.





No costly mechanisms needed!

Lindberg Double Acting Air Cylinders are proving their adaptability and worth in a wide variety of industrial uses. These simple, dependable, efficient and versatile cylinders are effecting considerable savings throughout industry by the reduction or complete elimination of costly mechanisms involving cams, gear drives and complicated set-ups.

Don't forget-with slight modifica-

tions, any size or model of Lindberg Air Cylinder may be used for low pressure hydraulic applications.

WRITE FOR NEW BULLETIN 731—this 16 page catalog just off the press gives details of all standard Lindberg Air Cylinder models and sizes with complete tables on bores, pressures, weights, mountings and conversion to low pressure hydraulics.

Remember-BULLETIN 731 for COMPLETE DETAILS ON AIR CYLINDERS

LINDBERG AIR & HYDRAULIC CYLINDERS

Lindberg Engineering Company 2442 West Hubbard Street, Chicago 12, Illinois

Specify Lindberg

when you need HYDRAULIC CYLINDERS
OIL HYDRAULIC PUMPING UNITS
MILL TYPE CYLINDERS • CENTRIFUGAL
BLOWERS • AIR VALVES















...the word from the wise in milling cutter circles

The modern Lovejoy line of inserted-tooth milling cutters are ordered and reordered on the basis of performance. Proof?... our first customers are still with us after 30 years of satisfaction.

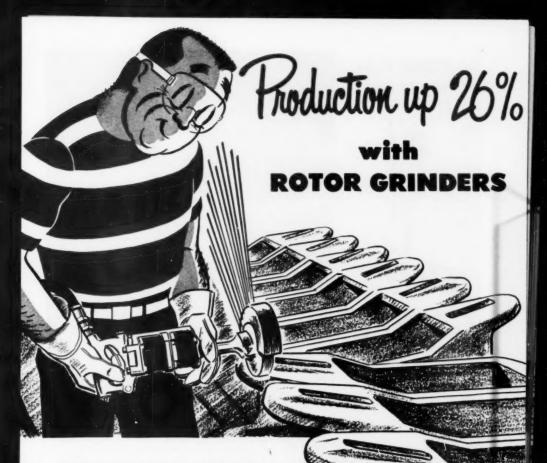
The modern Lovejoy line has never been more complete. Improved new designs, both standard and special, are coming constantly from our large engineering staff.

The modern Lovejoy line features the exclusive "positive-locking" device to allow maximum use of each blade and minimum loss in sharpening.

The modern Lovejoy line of milling cutters, boring tools, arbors, flywheels, etc., plus outstanding field service, can help you cut your production costs, just as it has for others.

136 MAIN ST., SPRINGFIELD, VERMONT

LOVEJOY TOOL COMPANY, INC.



AT this steel foundry, making railway car bolsters and couplers, grinding operations were slowing the production schedule.

PROBLEM: Need for more finished pieces per day. Reduction of high wheel cost. Reduction in "down time" of equipment for repairs. Formerly used 8", 13-pound grinders.

SOLUTION: Rotor Application Engineer recommended 6", 6,000-rpm

Rotor Grinders. Weigh only 94 lbs.

RESULTS: Production stepped up 26%. Less operator fatigue. Wheels last longer. Finishes are better.

The Rotor Application Engineer can help you too. Call or write for Catalog #38.

AIR O'TOOL

AIR

THE ROTOR TOOL CO

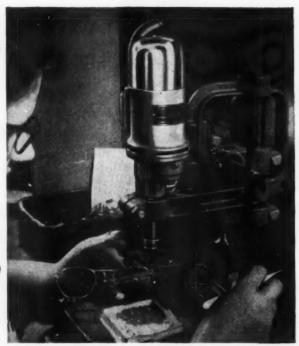
CYCLE

CLEVELAND, OHIO

Millers Falls versatile No. 52



CUTS COSTS 64%



on a job that "couldn't be done" with a power screw driver

Driving tiny optical screws (.45" diam., 90 threads per inch) in delicate eye glasses — for years this operation has been considered impossible for a power driver.

Yet today a Millers Falls No. 52 is doing the job — quickly, accurately, safely — and saving 64% in labor costs for a leading optical manufacturer.

The secrets: 1) Millers Falls patented, super-sensitive "Adjustomatic" Clutch, which is capable of controlling torque to inch-ounces.



The Mark of Superiority

 Ingenious special fixtures developed as a result of Millers Falls wide experience in solving similar problems.

Delicate or High Torque Driving — No Job Too Tough for Millers Falls Electric Screw Drivers

Whether your requirements call for delicate, feather-light torque control or powerful, heavy-duty driving, Millers Falls has the drivers and the know-how to save you time and money on practically any screw driving application.

Write for complete details on Millers Falls wide line of high-speed electric screw drivers. Capacities for machine screws up to ½". for wood screws up to No. 20 — 2½". Full information on request — or better yet, let us arrange for a convincing demonstration on your own work.

MILLERS FALLS COMPANY Greenfield, Mass.



Indignant about the steel shortage?

Let us try to help you! In the supplies of steel that are available, we can often find a type of steel that will answer your particular purpose. Call one of our salesmen the next time you are faced with a steel supply problem. Our experience and resources may furnish your solution.

UNITED STATES STEEL SUPPLY DIVISION



MEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. - WAREHOUSES COAST-TO-COAST BALTIMORE - BOSTON - CHICAGO - CLEVELAND - LOS ANGELES - MILWAUKEE - MOLINE, ILL. - NEWARK PITTSBURGH - PORTLAND, ORE. - ST. LOUIS - TWIN CITY (ST. PAUL) - SAN FRANCISCO - SEATTLE Sules Offices: INDIANAPOLIS - KANSAS CITY, MO. - PHILADELPHIA - PHOEMIX

ROCKFORD, ILL. - SALT LAKE CITY - TOLEDO - TULSA - YOUNGSTOWN

UNITED STATES STEEL

IT TAKES



THAN A GOOD MACHINE TO CUT A GOOD GEAR

it takes:

- • The determination to produce a quality product
- The establishment of adequate metallurgical "specs"
- Blanks to have precisionmachined bores and faces
- Blanks to be held true with bore
- Real care given to set-up in mounting blank
- Fixtures to have precision locating-faces
- Studied balance between roughing and finishing cuts

As every gear man knows, the control inherent in the Fellows Method can turn out gearing of super accuracy.

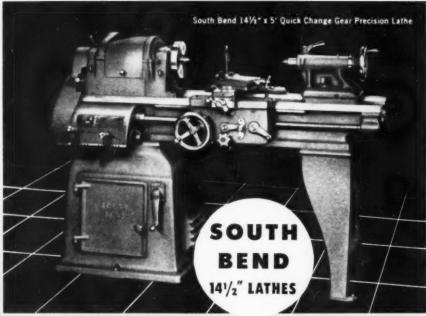
But—since accuracy in gearing is directly related to all preceding operations, it is necessary to plan ahead of the actual cutting if any machine is to do its super-accurate work.

Blanks, for example, must be accurately machined...mounting must be executed with utmost care...roughing and finishing speeds and feeds must be wisely proportioned. Then, the Gear Shaper, tooled with Original Fellows Cutters is unmistakably the experts' finest precision tool.

Of the same high order is Fellows Field Engineering Service. So, for high-accuracy gears, start by discussing your over-all plans with an engineer from the Fellows Office nearest you.

Fellows

THE FELLOWS GEAR SHAPER COMPANY
Head Office and Export Dept., 78 River Street, Springfield, Vt.
Brunch Offices: 323 Fisher Bidg., Detroit 2; 5835 West North
Avenue, Chicago 39; 2206 Empire State Bidg., New York &



FOR FAST, PRECISION MACHINING

SPECIFICATIONS

 South Bend 14½" Lathes offer many advantages for precision machining. Ease of operation, speed, power, accuracy, and efficiency are some of the features responsible for their popularity. Often the precision and quality of finish obtained with South Bend Lathes are such that subsequent grinding, honing, or lapping operations are unnecessary. Substantial savings in capital investment, power consumption, floor space, and labor costs have resulted from their installation.

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	BENCH LATHES	PLOOR LATHES	TURRET LATHES	DRALL PRESSES	BENCH SHAPES
Nume		Compar	Ψ		- (F
Street		City & St	-		SOUTH

7 years ago





proudly
presented
to industry
the "first"
complete sets of

CARBIDE GAGE BLOCKS

Many years of research and development, coupled with rigid tests, resulted in a Quality Gage Block readily discernable to the discriminating buyer.

Today as always, we are alert to the possibilities of the newer scientific wear-resistant metals. Our research program is continuous to meet the ultra in precision requirements demanded of this Atomic Age. We are cognizant of the responsibilities we share in building a better tomorrow.

The swing to Fonda is truly reflected by the unprecedented demand for Fonda Gage Blocks — testimony to the overwhelming acceptance of our product.

You too can be sure if it's a Fonda Block. Get to know the Fonda representative in your area. Let him help you with your Gage Block Program.

Write for descriptive literature.



FONDA GAGE CO., STAMFORD, CONN.

Pioneers in Carbide Gage Blocks and Ultra-Finish Steel Gage Blocks. (FEATURE SET — NO. 84S — GRADE A, IN STEEL — STILL AVAILABLE AT \$350)

March, 1952

59

"CAN YOUR SURFACE

Rigid DoALL Surface Grinders Can Take Heavier Cuts and Produce Precision Work Faster

TRY THE TEST illustrated at the right. Take the heavy cut, reverse the crossfeed and let the wheel run back over the ground surface. If it sparks it is grinding again, showing that the wheel didn't take the full depth of cut on the first pass. If it is a DoALL Grinder it won't spark.

This demonstration proves the great rigidity of the DoALL Grinder, shows why it will do a given job in less time. You can take a heavier cut without "give" in the spindle or the table. The wheel doesn't climb over the work piece—it cuts true in one pass.

you can take these heavier cuts without burning the work. Coolant flows in at the hub, through the wheel and out at the point of contact in a fine mist. There is always coolant where the heat is generated, unlike flood cooling where the wheel blasts the coolant away from point of contact.

There is a DoALL Surface Grinder for every toolroom or production requirement. Call your local DoALL Sales-Service Store today or write:

THE DOALL COMPANY

254 N. Laurel Ave., Des Plaines, III. 35 Local Sales-Service Stores in North America

*U. S. Patent No. 2470350

PRECISION HYDRAULIC SURFACE GRINDERS ARE FASTER, MORE RIGID, MORE ACCURATE!



MASSIVE FRAME—column support and base are single-piece chrome nickel steel casting, strongly ribbed for great rigidity.







GR-65







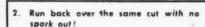
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ZEPHYS

DAME PLA

GRINDERS DO THIS?

Take a .010" cut with a .010" cross feed in high chrome—high carbon steel.



You can see the above test as part of a complete demonstration of a DoALL Precision Surface Grinder right in your own plant, without cost or obligation. Call your local DoALL Sales-Service Store today.



SPINDLE SUP-HUSKY PORT, dowelled and bolted to column, vents wheel from chattering or springing away from work.



.010"

VERTICAL FEED IN INCRE-MENTS OF .0001" — made possible by rigidity and pre-cision of extra-long 30" column.



Ask for Descriptive Catalog



















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WINTER Home Tops, The oil other tops in the complete WINTER line, have inhalls Belonced Action, for botter also control and lodger tool life.

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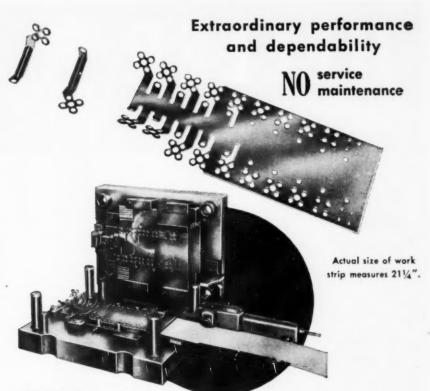
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eleven station progressive die for production of right and left hand ignition cable supports. Photograph illustrates Rol-Di-Feed mounted directly on die set, feeding .073" thick x 77/8" wide c.r.s. In operation over two years—customer reports no service or maintenance expense!



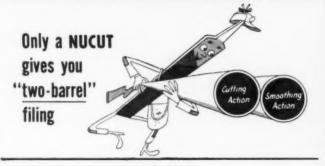
ANOTHER fine example of the outstanding performance characteristics you can expect from Dickerman 9 inch Rol-Di-Feed.

9 INCH ROL-DI-FEED

MAJOR manufacturers of appliances, time pieces, sun glasses and cameras, motor laminations, lighting fixtures, locks and prominent stamping companies now use the Rol-Di-Feed.

Investigate the advantages of automatic feeding with Dickerman Rol-Di-Feed.

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At every stroke

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STANDARDIZE AND SAVE WITH STANDARD RED SHIELD METAL CUTTING TOOLS, STANDARS DISTRIBUTORS IN MORE THAN 300 CITIES CAN SUPPLY YOUR REQUIREMENTS

POSITIVE VISIBLE CONTROL



COMPARATOR DIAL SNAP GAGE

Enables inspector to use Note that the weight of part rests on solid anvil. both hands for checking.

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THE FASTEST, MOST ACCURATE INTERNAL GROOVE DIAMETERS MODERN METHOD TO CHECK

pecially designed to provide POSI-The Nilco Groove Gage is a self. positioning precision instrument es-

TIVE CONTROL in checking diameters of internal grooves and recesses, Truarc and "O" rings, oil grooves, washer grooves, etc. Because of its unique design and patented both skilled and unskilled personnel in quality control and inspection throughout features the Nilco Dial Groove Gage can be used effimaintaining ciently by production.

Setting can be made direct to master ring gage, a gage block combination, or micrometer.

Illustrations and literature are available on this gage and also on the companion dial groove location gage for checking internal groove locations.

> gage, giving control, confidence, and speed to

the operator.



LARGE SIZE SNAP GAGE

Even for large diameters. gage is light, compact, easy to handle. Will repeat. Nilco dial snap gages make possible close shoulder checking, radius guides applicable on re-





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bore gage provides the operator control on small bores in graduamodels cover the range This fastest setting dial tions of .0001". Three from 36" to 1".



BORE GAGES LARGE DIAL

pistol grip design from 1" to 12". Checking internal diameter quickly, easily; simple setting to gage blocks or master ring. No skill needed for setting or checking. Compactness and simplicity of design make possible five models in standard or

gages, dial bore gage, internal and external dial spline gages for checking pitch diameter of gears and splines. New NILCO DIAL

Also, all types of dial snap

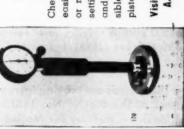
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If production costs are out of balance with selling prices, and cutting into profits, it will pay you to investigate the advantages of LIMA GEARSHIFT DRIVES. Lima Drives will increase production, give greater machine flexibility, and, at lower costs. The end result will reflect in Greater Profits.

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IT'S THE FINAL OPERATION THAT CAN MEAN THE DIFFERENCE

PRECISION tapping and threading is often the final step in finishing a piece that has undergone many previous machining operations. Here is where inaccurate fits or thread errors can mean costly scrap loss, and upset your production schedules.

Warner & Swasey Precision Tapping and Threading Machines drastically reduce these wasteful rejects. These machines feature a radically different and exclusive leading-on principle, with solenoidactuated guide fingers operating on a lead screw. This provides positive control on tapping and retracting strokes, completely eliminating backlash or drag. A super-sensitive clutch, adjustable to safe torsional resistance, stops the tapping operation immediately when the tap hits a hard spot or chip accumulations. saving spoiled threads or broken taps. Precision depth control assures depth accuracy to within 1/10th of a revolution of the tap or die.

These and other special features insure fast, extremely accurate tapping to Class 3 or 4 gage fits in a wide range of materials—from tool steel to plastics.

WARNER & SWASEY

Your Warner & Swasey Field Representative will be glad to show you how a Precision Tapping and Threading Machine can increase production and cut scrap loss in your shop.

YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS AND TAPPING MACHINES

Not One Cent for BUCKEYE Tool Maintenance!



In April, 1950, a Buckeye vertical sander was purchased for use in the shop of a leeding textile plant. The tool was chosen for its greater power output and for its adaptability to a wide variety of grinding and sanding jobs.

By January, 1952, this Buckeye sander proved to have still another advantage: In twenty months of continuous service, not one cent had been spent for tool repairs!

The Master Mechanic has just bought a second Buckeye sander, chiefly because: "If two

TOOL SERVICE RECORD

Tool	BUCKEYE	Vertical Sander
Power		Air
Capacity		9" Pad
Speed		4500 RPM
Job		d grinding and

TOTAL TOOL MAINTENANCE AND REPAIR COSTS

April 1950— \$0.00

jobs requiring the use of a sander are in process at the same time, the men prefer to wait until the Buckeye tool is available."

Still not using Buckeye tools in your plant? You could be missing out on real savings, on production costs as well as maintenance. It will cost you nothing to try Buckeye—on your own job—without any obligation.

Duckeye Tools

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Portable Air and Electric tools for Industry

IN CANADA: Joy Manufacturing Co. (Canada) Ltd., Galt, Ontario

Manpower problem solved

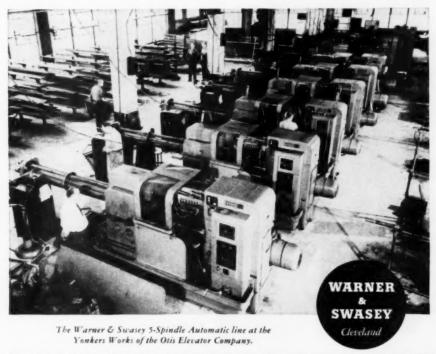
BY WARNER & SWASEY AUTOMATICS

AT OTIS ELEVATOR COMPANY, 6 Warner & Swasey 5-spindle Automatics replaced 17 older machines—and 6 critically needed men were released to work elsewhere in the plant.

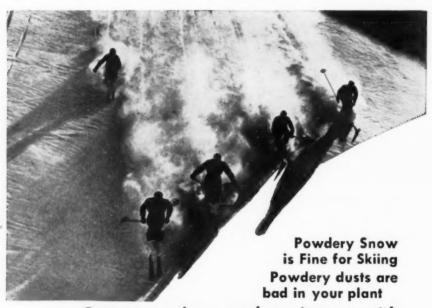
These automatics are used at Otis for short runs on specially machined parts—studs, bolts, nuts and other screw machine products—required for custom-made elevators. And only 3 men are required to set up

and operate these 6 automatics an important point to consider in today's tight manpower market. Parts are now more uniform, and are produced at a higher rate.

If manpower is one of your problems—or if you need new machines to keep pace with present day production demands—have your Warner & Swasey Field Engineer show you just how automatics can fit into your production setup.



YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS, AND TAPPING MACHINES



Protect workers and equipment with TORIT DUST COLLECTORS

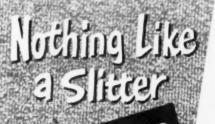
You can shuss along at a great pace when skiing down a slope of powdery snow. In your plant, however, the powdery and abrasive dusts streaming out from grinding, polishing and cut-off machines can make production end up in a bone shattering sitzmark. Don't be a slope-dope where your plant is concerned. Equip all your dust-creating machines with Torit Dust

Collectors. Then watch the line on your production chart swing into a beautiful *telemark* as it turns upward.

Torit Dust Collectors are available in models and sizes for most industrial installations, and special adaptations can be quickly fabricated. Write today for complete information and the latest Torit catalog.



Manufacturing Co.



FOR SPEEDING PRODUCTION SCHEDULES

an buy mill-width coils instead of width coils are more numerous. so substantially lower prices, and obtain liventous.

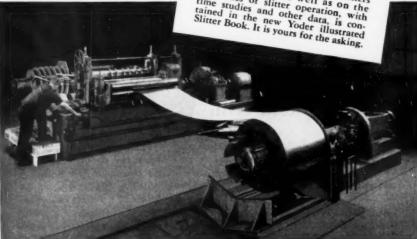
Inventory requirements, too, are greatly reduced, because you can, in pected demands for slit strands with coils of the proper gauges.

This means the strands with the proper gauges.

This means better control not only of coiled strip supply, but of production planning; and production schedules are much easier to meet.

For requirements as low as 100 tons per month, direct savings alone may in a Yoder slitter in the short time Information.

Information on the respective merits of different types and sizes of slitters are acconomics of slitter sawell as on the time studies and other dara, is conslitter Book, It is yours for illustrated



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Complete Production Lines.

- * COLD-ROLL-FORMING and auxiliary machinery
- * GANG SLITTING LINES for Coils and Sheets
- * PIPE and TUBE MILLS-cold forming and welding



High holding pressures and precision construction of "De-Sta-Co" Toggle Clamps make this assembly fixture efficient. Locating pins welded to clamp bars locate channels for welding assemblies of varying lengths. Positive holding pressures, up to 4000 pounds in some models, hold parts in close contact essential for good production welding. The same principles apply to your drilling, machining, bonding, gluing or other production processes. Quick toggle action permits fast, safe loading and unloading of fixtures, uniform results, even by untrained workers.

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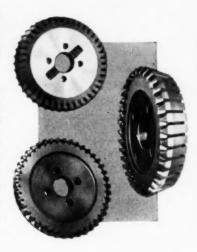
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THE TAFT-PEIRCE MANUFACTURING CO., WOONSOCKET, RHODE ISLAND

T-P means TOP PRECISION



Showing a settin of water type "BL Hole Punching and Type "N. Nocking Units for punching in the same operation on Press. Twin Column Press.

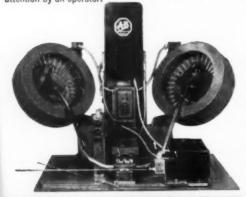
Showing a template setup of Wales Type"H" Hole Punching Units for punching holes in curved and straight flanges and

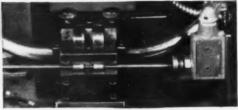




Modern production demands the speed and accuracy of this great aid to SELECTIVE FEEDING. It makes slow, manual methods obsolete and releases "frozen" manpower for more productive work. D.P.S. Motorized Hopper Units select, orient and feed production parts of a wide variety to a given position for primary and secondary operations. They are readily adaptable to all types of standard production equipment and special machines that would otherwise require constant attention by an operator.







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2809 W. FORT ST.

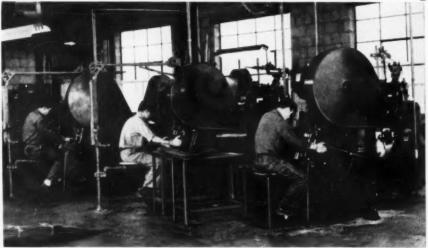
DETROIT 16, MICHIGAN



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Bearings on all shafts in the headstock . . . Oversized Heat-treated and Shaved Stee Gears in headstock . . . Apron Control for start, stop, and reverse of spindle . . . Knob Control Handle for apron length feed friction . . . Reverse in apron for feeds . . . Taper Gibs throughout . . . 57 Feed and Thread changes . . . Accuracy .0005" at every point of alignment. These and many other refinements make the Sebastian Type "R" Lathe an outstanding buy in the medium-price field.





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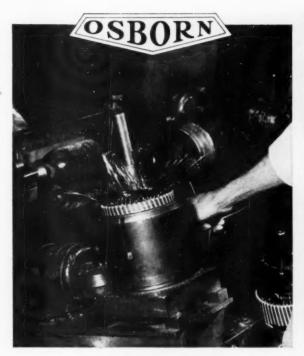
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Says Mr. E. F. Paner, President and General Manager: "Our operations require production equipment of great versatility and high efficiency in varied applications. We're using 30-ton Press-Rites for blanking, forming, piercing, extruding and assembly and are mighty pleased with their performance. We've found Press-Rites stand up well... need little maintenance even under hard, continual usage. They're tops with operators, too... for safe and easy operation."

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Wire stripping is typical of thousands of cleaning operations throughout Industry which have been simplified and speeded by Osborn Power Brushes. Your Osborn Brushing Analyst is experienced in finding solutions to cleaning and finishing problems of all kinds.

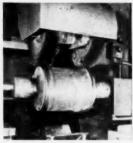
His service is backed by the extensive engineering facilities of Osborn, to devise brushing methods and special machines to help you. There is no, obligation. Call today or write The Osborn Manufacturing Company, Dept. 659, 5401 Hamilton Avenue, Cleveland 14, Obio.



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The ROUSE HAND MILLER is a widely used, inexpensive, high speed, ball bearing, motor driven machine for handling light cuts in brass, aluminum, steel, plassics, and ather materials—fast, accurately, and at very low cost. Only \$106.00°.

Fixtures (illustrated) extra.

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- ★ DRASTICALLY CUTS YOUR INVESTMENT IN EQUIPMENT. Replaces expensive production machinery—or releases it for other jobs.
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A.S.A.-L-OO TAPERED KEY DRIVE... STEEL SPINDLE, FORGED AND PRECISION GROUND... 1" COLLET CAPACITY, 1%" BORE

The headstock design, weight and special features are but a few of the reasons for Clausing's leadership among 12" heavy-duty precision lathes. Note the massiveness of the grey-iron casting, the enclosed construction so gears can travel in bath of oil. Spindle turns on large selected Timken tapered roller bearings that assure long accuracy life

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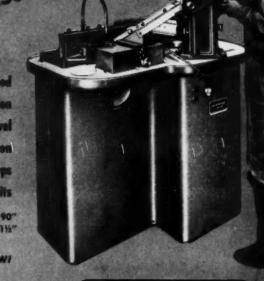
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ROLLS 120 to 150 PCS. PER MIN.

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NOBLEWEST "Speed-Marks" Vital Defense Products

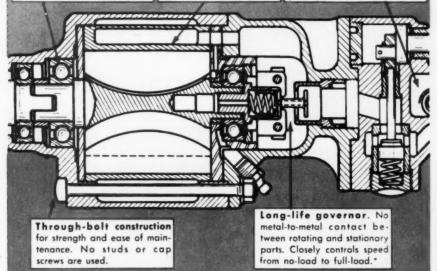
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†Except in 1400 Series grinders.



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Motor drive: flanged mount; ¼ hp; 30 gal. per min., spring tension packing; replacement pump shaft.

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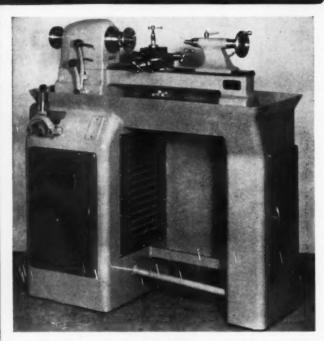
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MAR. 17

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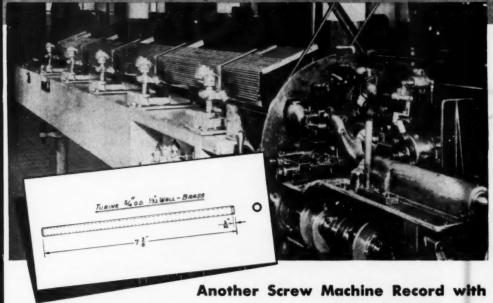
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LIPE Automatic Magazine Loading BAR FEED

THE JOB—Part shown above made by Trico Products Co., Buffalo, N. Y., on #00G B&S Screw Machine. Length of this part required 7 feed-outs of the feed fingers. Cycle time: 3 secs.—an actual gross of 1200/hr. Best average production with one man handling this and one other machine: 600/hr.

THE IMPROVEMENT—Lipe Automatic Magazine Loading Bar Feed was installed on machine producing part. Cycle time cut to 1¼ secs. Actual gross upped to 2057/hr. AML Bar Feed, eliminating "cutting air," obtained 94% of actual gross, or 1930 pieces per hour. A production increase of 221%! Further savings: Same operator now runs four machines, two equipped with AML Bar Feeds.

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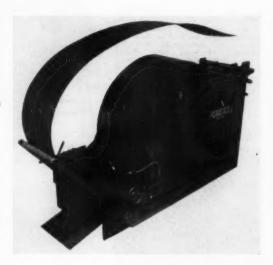
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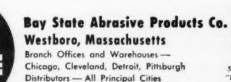
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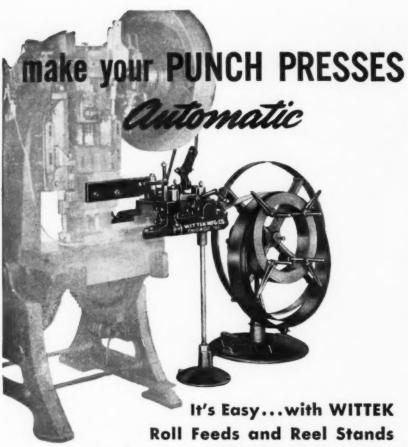


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RECTANGULAR ... work held to extreme edges of chuck. Sizes to 36" x 96".

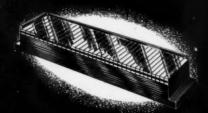
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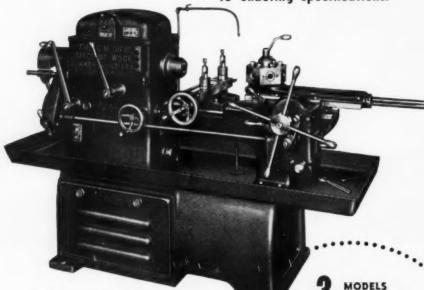
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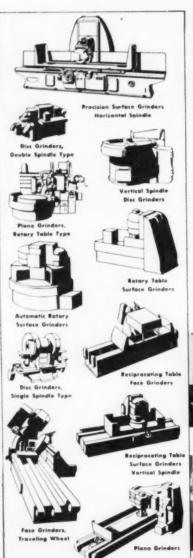
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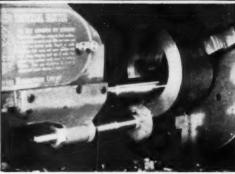
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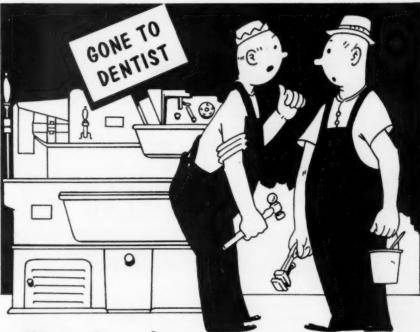
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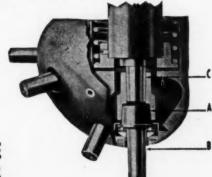
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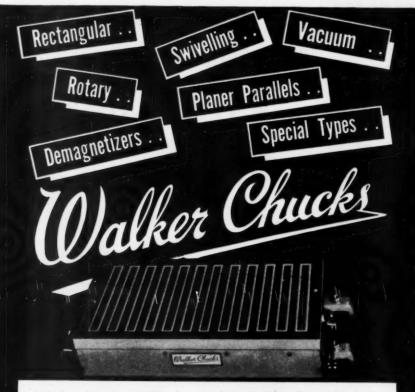
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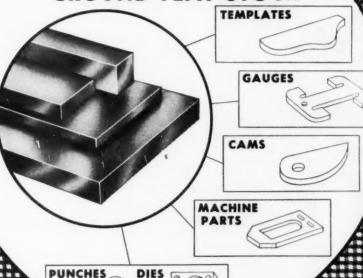
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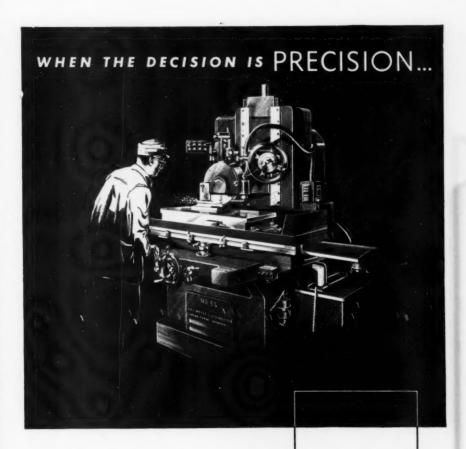
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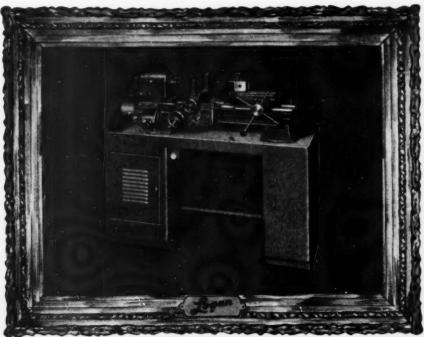
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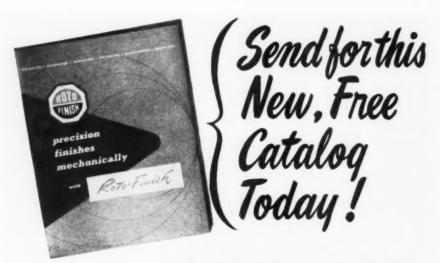
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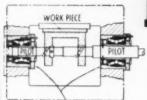


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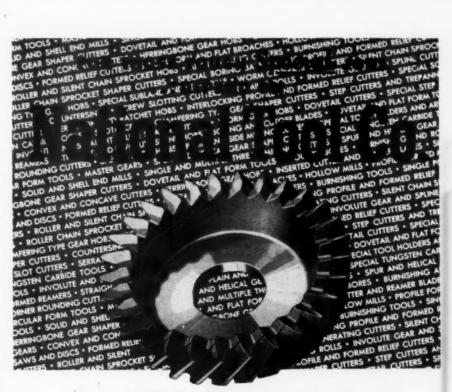
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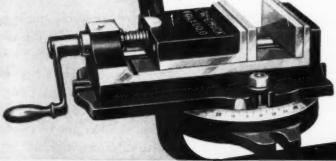
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Jaws: 4½" wide. 13¼" deep. Opens 3"

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Featured in this issue

Special Report on Boring Machin	es171
New cutting fluid	251
ASTE Industrial Exposition in Ch	icago, March 17-21259
Washington news letter, by Aronold Kruckman, BLUE BOOK'S Washington correspondent, Page	desirable elements of many cutting fluids. The new fluid increases tool life, at the same time preventing machine down-time due to "purging" the machine of rancid cut-
How's business? Page165	ting fluid. Page251
Special report on Boring machines. This is the 18th in a series of articles dealing with the specifications, descriptions and photographs of American machine tools. This month's report is devoted to Horizontal Boring, Drilling and Milling Machines. Page	Chicago welcomes ASTE. A preview of the tools and equipment to be exhibited at the ASTE Industrial Exposition, as well as a floor plan of the Amphitheatre, list of officers, plant tours and papers to be delivered in conjunction with the show. Also included is the list (complete up to press time) of exhibitors and their booth numbers.
Methods of establishing the location of holes and flat surfaces. A number of examples which show characteristic elements of surface location. In the majority of cases a flat surface is located from some other parallel flat surface over a bore or any other machined hole. Page	Preventive maintenance, a program for industrial production, by H. F. McCullough, and H. D. Beale. A program for eliminating unexpected machine downtime; instead the authors present a plan for planning downtime and handling maintenance problems before the machine breaks down of its own
Joseph T. Vinbury. With the power positioning device the machine will drill or bore a number of holes and then repeat all the operations, spacing them with extreme accuracy. Page	Foremanship Forum: look before you leap, think before you speak, by Edmund Mottershead. It is important for foremen to speak effectively. Much of their success depends on their flow of language and their ability to put their ideas and opinions across. In this article Mr. Mottershead, BLUE BOOK'S foremanship expert gives
Abrasive belt grinding, by John E. Hyler, page232	a few hints and rules for effective public speaking. Page
Welded fixtures expedite machining of die castings, by Herb Downing. The Snow Mig. Co. has some very interesting welded fixtures in its Bellwood, Ill. Plant. A description of some of the fixtures is given by the author. Page	Available literature, Page
New Cutting fluid eliminates rust, gum, stink, by W. F. Schleicher, A new cutting	Mechanics through the ages. Page462 Product index. Page464
fluid has appeared on the market which appears to eliminate some of the more un-	Index to advertisers. Page472
The state of the s	

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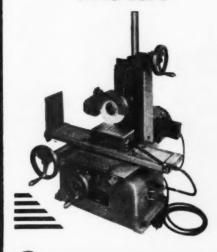
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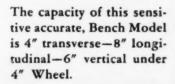
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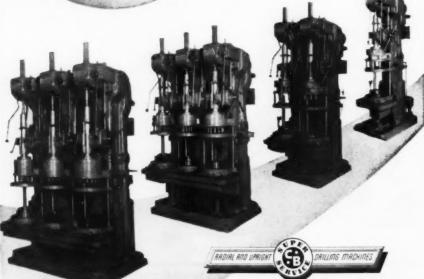


This battery of highly productive 21" and 24" Cincinnati Bickford Super Service Direct Drive Drills is drilling 24-257" holes: tapping 24-16" holes; step drilling 4-11" x 16" diameter holes 15%" deep; tapping 4-5," holes in this crank case housing.

The operations are performed on both ends of three sizes of castings. All operations are completed at the rate of one a minute.

These Direct Drive Drilling Machines are made in the following sizes: 21" with 3 or 4 horsepower motor; 24" with 5 or 71/2 horsepower motor, 28" with 71/2 or 10 horsepower motor.

Write for Booklet U-27 for complete description.



THE CINCINNATI BICKFORD TOOL CO. cincinnati 9. Onio U.S.A.

AS THE Editor SEES IT

So, you're going to the show . . .

Take a goodly supply of corn plaster, money and blank purchase orders; chances are you'll need all three. If you have a collapsible camp chair, take that too. If you get tired open the chair, sit quietly in a dark corner and meditate on production, tools and human nature.

You'll find it encouraging, possibly even a mite vexing, to contemplate the thousands of people jostling one another for a look at the wares on display in the booths. It is heartening to see so many people gathered together from all parts of the country scrutinizing new methods, processes, and novel pieces of equipment designed to profit them in their work. Many will ferret out answers to their problems, others will see a sickly condition only after the nostrum is held under their noses—you know, like the chappie who read by condlelight until someone flickered a light bulb at him. The sputtering candle suddenly became a hot problem.

Still, there will be people sedately promenading about the exposition with granite-like conviction in their minds that all's well with the plant: no problems, no worries, no production, no nothin'. They refuse to see in a tool or a process an improvement over a situation in their plants, a situation which might not yet have assumed the proportions of a problem. Take the case of dies: a percentage of all dies break in the press for one reason or another and a calculable amount of money and manhours are set aside to cover this contingency. Die breakage is expected. Been

that way for years. No problem. It's inevitable. It's a situation. Yet, at the show there'll be a gadget to prevent this costly breakdown. However, be unafraid, these grand viziers will resist this new-tangled contraption; all's well in the plant.

This sort of thing will unquestionably be vexing to you as you think about it while resting on your camp chair. But then, isn't it human nature to withstand the onslaught of fresh ideas, to fight back, or at best ignore, innovations? Most of us harbor a streak of insecurity which prevents us from trying the new and novel: we're afraid the world will snicker when we drag in the contrivance we've bought.

I don't think we should ever attend a show with only the idea in mind of discovering solutions to our problems, we should think of situations. Every machine operation, every operator's job, every process, every material is a situation. And it can be improved. The job can be done better, faster and cheaper.

Here in the show, buried among display signs, drapes, tables, chairs and tools are chappies who know all about your situation (it being their specialty) and who'll show you a better method of handling a production situation. You have to find them, of course, and you can't do it by sitting on a camp chair. So, if you're through with that chair let me have it for awhile. Me? I got no problems.

If you have no camp chair, come see me in booth number 418 and rest your feet.

William 7 Schleicher

this weight-lifter measures



Milwaukee Crane and Service Co. of Cudahy. Wisconsin uses a 32" LeBlond Heavy Duly to machine cable drums for their big cranes. A single cut the full length of the work straightens and sizes the castings. Spindle speed, 18 rpm; feed. 062 pir depth of cut. 1" tool carbide. Spiral cable grouves are then chased with a highspeed steel form cutter. Spindle speed, 8 rpm; depth of cut. 062". Other work performed by Milwaukee Crane and Service Co. on their LeBlond lathes includes turning and boring gear blanks, crane wheels, pulleys, shafts, and couplings.



Take the cable drums of these giant weightlifters. Milwaukee Crane turns and grooves them fast and efficiently on a 32" LeBlond Heavy Duty lathe, recommended by Le-Blond's Chicago office. First a carbide tool takes a heavy cut, straightening and sizing the 8000-pound cast drums. Then the seat for the cable winding is grooved with a high-speed steel form tool. These fast, chatter-free operations fit Milwaukee Crane's needs like a crane-operator's glove.

Big jobs like this get pared to workable size by the new 32" LeBlond Heavy Duty lathe with standard 4-way rapid traverse. The 32-speed spindle, rigidly supported by four anti-friction bearings, is smoothly driven by hardened and ground steel gears. Other well-known LeBlond standard equipment includes hardened and ground replaceable steel bed ways, totally enclosed quick change box, thrustlock tailstock and many more.

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LAST MINUTE WASHINGTON NEWS



by Arnold Kruckman

Washington Correspondent



. In his recent appearance before the Maybank Committee Defense Mobilizer Wilson underlined that designs for "fantastic" new machine tools, are urgently needed to produce novel military equipment which is still on the drawing boards. He said jet engines and other major products present the machine tool other major products present the machine tool industry with immense problems. Wings for jet fighters, made of aluminum three inches thick, must be carefully machined, said Wilson. He recited that one major manufacturer, after a year's great plant expansion and expansion of his working force, will be able to produce 300 units of an important new type, while there is a desperate need for 1200 of the machines that he will build in that year. Wilson said he is hunting someone to make the other 800 or 900. He

says it is true two or more standard types of machine tools can do the job, but not as quickly and not as inexpensively. He expects, during the second quarter, production will reach the annual rate of \$1,300,000,000. . . . Government still is holding back 6,000 machine tools in reserve for scheduled jobs coming up by June or July. . . . DPA shortly will issue a statement on the machine tool situation. The proposal for a \$2 billion stockpile of machine tools is received skeptically. Military designs and demands change too rapidly. Obsolete machine tools would be as embarrassing as huge stores of outdated weapons.

William L. Campbell, Vice President, Food Machinery and Chemical Corporation, California, is now Deputy Administrator of DPA for Production, and Chairman of DPA's Production Executive Committee. It is this Committee which has been the ultimate authority in machine tool problems. Campbell succeeds Clay P. Bedford who becomes Special Assistant to the Secretary of Defense, and Expediter of Military Production. Campbell is expected to anticipate bottlenecks.

Herbert Johnson, of Jones and Laughlin Steel Corporation. Pittsburgh, is the new Director of the Iron and Steel Division. NPA, succeeding Wallace B. Quail who returns to Armco Steel Corporation. . . . Henry H. Fowler, new NPA Administrator, ap-pointed Edwin C. Garwood, like Fowler, a Government career man, as NPA's Deputy Assistant Administrator for Industrial and Agricultural Equipment. He succeeds Frank M. Shields, now Director of Production Resources Office in National Security Resources



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Board. Garwood will have direct supervision of the Metalworking Equipment Division. . . . Franz T. Stone, who was head of the Industrial and Agricultural Equipment Bureau, (including the Metalworking Equipment Division), is now Deputy Administrator, second ranking post in NPA.

In the Metalworking Division, NPA, E. Payson Blanchard, is probably the best informed machine tool specialist. He is at 3J13 new GAO Building, telephone Sterling 5200, extension 4506.

Ralph R. Irwin is Chief of Machine Tool Section, OPS Machinery Branch. You find him in Tempo S, telephone Sterling 4200, extension 5990.

C. E. McArthur from the Machine tool industry, now on Munitions Board staff, is in charge of the central inventory of Government-owned production equipment, including machine tools.

CPR-30, SR-2, Rev: 1 Amdt. 4, modifies OPS regulations covering machine tool pricing so that the manufacturers may reflect the increases in their costs due to (1) overtime labor, (2) shift premium hours, (3) increased subcontracting. The three modifications in cost may be used simultaneously, so that for each fiscal quarter they will be expressed as a single change in the ceiling price. . . Chief Irwin, OPS Machine Tool Section, reports revision of CPR-80 - the used machine tool regulation, discussed by the Used Machine Tools Advisory Committee recently, is under way and is expected to be soon. . . Vanishing OPS Administrator Mike DiSalle recently told the Maybank Committee all metalworking industries are pushing up OPS ceilings.

Worst remaining raw materials bottleneck, Washington reports, is heavy steel plate. Four or five inch plates are still critically scarce. There has been slight improvement in deliveries of widths below one inch. . . NPA Machine Tool Industry Advisory Committee endorsed limitation orders proposed to restrict the application of not more than one coat of primer or sealer on tools; to use filler only for bad cavities or fissures; and no more than two coats of paint, lacquer or enamel. The order is expected to save considerable manhours of labor. . . Another order will require dealers in used machine tools, and new imported tools, to file inventories with NPA. Tools will be frozen in a dealer's shop for inspection by prospective purchasers. . . Another order will rescreen U-4 ratings, to assure the use of any new building production equipment in defense-supporting work. There will be a 45-day period during which machine tool builders can finish manufacture of tools on a non-revalidated U-4 order. . . . Another order will restrict use and manufacture of diamond grinding wheels to save critically short diamond crushing bort.

NPA has promised machine tool builders to expedite labor cases in the Wage Stabilization and Salary Stabilization Boards; and to urge draft deferments for essential machine tool workers with the proper agencies.

By the time this is published the President will have issued an order deferring apprentices in the machine tool in-

dustry from military service. They are made top priority essential.

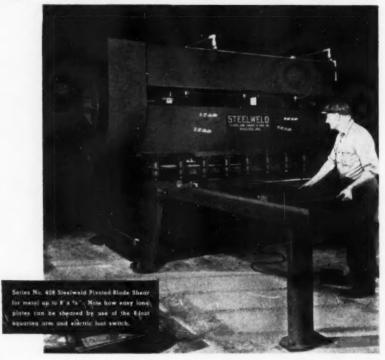
Six hundred thousand steel workers are almost wholly unionized, according to U. S. Labor Department. Five sixths are in the Middle Atlantic and Great Lakes Region. West and South each have about 6%. . . . Steel workers come in 32 labor grades. Wages range from \$1.68 per hour in the South to \$1.81 per hour in the Great Lakes region, excluding overtime and premium pay. Some occupational ratings run as high as \$3 per hour. Vacations with pay run from one week to three weeks. . .

WSB ordered all tool and die industry cases shall continue to be processed by appropriate regional boards, not the national board. . . . Bureau of Labor Statistics reported average work week of over 47 hours in the metalworking machinery industry springs chiefly from continued heavy requirements for machine tools. Shortages of lathe operators, machinists, draftsmen, tool designers and machine shop workers are almost as serious as scarcities of engineers, reports the Bureau. Some employers report shortages of tool and die makers more serious than shortages of professional people. . . . Wage Stabilization Board no longer requires reports as to such wage increases you may grant under GWR-6 (general increases within the 10% "catchup" formula), and GWR-8 ("cost-of-living" increases). Regulations now are stricter in regard to records which justify the increases. They must be kept for the duration of the Defense Production Act and two years thereafter. . . . Those needing information about salary stabilization problems can go to any of the 80 Labor Department Wage and Hour Division offices scattered from coast to coast. By the time this is published WSB will have announced exemption from the regulations of those who employ four or less. . . . The President recently issued an Executive Order establishing a Fair Employment Practices Board. Meanwhile the Senate programs hearings to establish a Fair Employment Practices Commission legislatively and permanently. . . . U. S. Department of Labor Bureau of Apprenticeship issued an urgent appeal for apprentices to become machinists, tool and die makers.

NPA revised basic steel order M-1, henceforth to regulate the production of iron and steel entirely by directives, or by production schedules authorized in connection with approved CMP 4-B applications. . . . The Steel Task Group, thirty-six top-flight steel executives, appointed last June by ODM Wilson, reported that we must find more manganese and more iron ore deposits, and beneficiate low-grade ores. They stressed the danger that our supply lines may be cut in war, and recommend aerial surveys with magnetometer and gravitmeter to locate domestic ores. They say we need more alloys and coating materials. By implication they emphasize that NPA and other agency staffs need replacement with qualified men from the steel industry to man all departments responsible for production and distribution and to compile more accurate estimates of total steel requirements properly phased to conform with expected production schedules and including factual estimates for components, machinery and equipment. It is acknowledged NPA and DPA production staffs now are not top level.



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The easy knife clearance adjustment is one of the features that Johnston & Chapman Co., Chicago, greatly appreciates about their Steelweld Shear. Since they produce perforated metal of various thicknesses, which must have sharp, burrless edges, it is essential that the knives always be set with the right clearance to make the best possible cuts.

This company has had over 50 years of experience in shearing. They point out that if the knife clearance is too much, light gauge metals will bend, and if too close, α shear is unnecessarily heavily loaded and the knives dull rapidly.

The knife gap of their Steelweld Shear is adjusted in a few seconds by simply turning the crank conveniently located on the right end frame. The ease and simplicity of this adjustment is impressive when compared to other shears which require the entire bed be moved and gap be set by feeler gauges.

Johnston & Chapman supply perforated metal for all sorts of purposes, including screening for coal and for television equipment. Their shear is used for cutting mild steel, stainless steel, brass and other metals from 28 gauge to $^{1}4$ inch thick.



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Machine Tool Progress Report

In January, 1952, Sen. Maybank's Committee, the Joint Committee on Defense Production, issued Progress Report No. 13, devoted entirely to machine tools. Report deals with the relations of the machine tool industry and the government since the Korean war. Copy of the report may be had from: loint Committee on Defense Production, Congress of the United States, Washington, D. C. It's worth having and reading.

Recommendations of the committee:

1. Modify the 4% interest rate now charged on the 30% advance payment extended under the pool order contracts either through elimination of the charge or modification of the price regulation to permit this interest as an element of cost.

2. Extend the same margin of profit on uncompleted tools in the event of termination as applies on completed tools under the pool order contracts.

3. Establish a renegotiation policy for the machine tool industry.

4. Find ways to prevent defense plants from pirating skilled operators from machine tool companies because of higher wages authorized for certain defense plants.

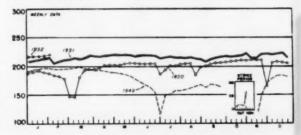
The Report says, "DPA has assembled some of the best people obtainable in the field who are,

General business indicators

source: U.S. Dept. of Commerce

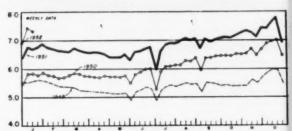
Steel production (Ingots and steel for castings)

(1935-39=100)



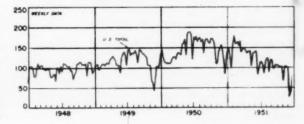
Electric power production by utilities

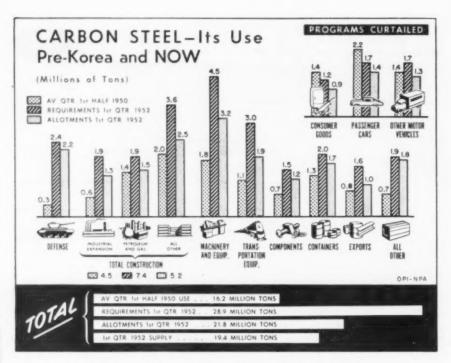
(Billions of kilowatt-hours)



Motor-vehicle production (Passenger cars and trucks)

(Thousands of vehicles)





among other things: 1. screening the machine tool orders to squeeze out unessential frills in design; 2. assisting the tool builder in spreading the area of subcontracting to increase output; 3. arranging schedules to satisfy requirements most efficiently to increase the manufacture of machine tools wherever possible."

The report further states, "There are still some marginal distress cases in the new machine tool set-up. This comes about by the interpretation of what is and what is not a machine tool. Some machine tool producers build two kinds of equipment in the same shop, with the same men, tools, and accounting system; one kind of equipment being classified as machine tool, the other not. This narrow interpretation is not agreeable with the machine tool builders. The optical comparator built by one company is a case in point. Because this machine is built under the same conditions as their machine tools, it is impractical to make the separate computations required by the two different price regulations.

Copper situation to improve

Cornelius F. Kelley, Anaconda Mining Co. chairman predicted recently that the U.S. copper supply picture "will begin to improve materially during the latter half of 1952.

"Currently U.S. mine production, including secondary treated by primary refineries, is averaging approximately 90,000 tons per month. With an estimated 35,000 tons per month available from foreign sources, the total present supply is in the neighborhood of 125,000 tons per month. This could be augmented somewhat if scrap intake were up to normal tonnage."

Increased production will come from Greater Butte Project and the new Sulphide plant at Chuquicamata, Chile. Anaconda projects now under way, both in the U.S. and foreign countries, should yield additional copper at an annual rate of approximately 80,000 tons by the beginning of 1954, at which time copper production should be approximately 205,000 tons per year above present levels.



Now engineers can plan ahead for stepped-up production with the duplicator they specify today!

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You'll find Gorton Twin-Spindle Duplicators ideal for long production runs of profiling or die and mold cutting operations—both roughing and finishing, in two or three dimensions.

If your present production schedule doesn't warrant twin-spindle operations, install a conventional Gorton Duplicator now. Whenever you feel the need, you can easily change to the twin-spindle head and ram assembly—cost of conversion only 22% of complete single-spindle machine. This doubles the ability of your duplicator to turn out work.

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Duplicator with twin-spindle head assembly and retary tables, equipped with two high-speed, 4-flute spiral cutters turning at 980 rpm for both roughing and finishing, profiled from the solid 20 impeller blades 9/16" high by 2" long. Cutting time: 4½ hours. BONUS: One extra identical work piece finished completely from one simple master of one blade.

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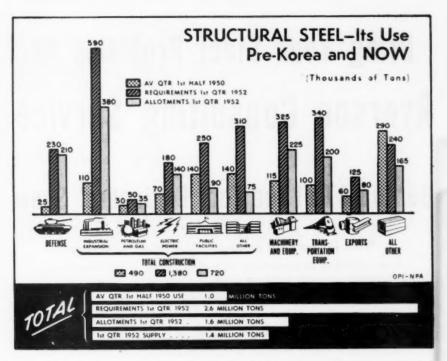
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This and that

ODM Wilson announced there will be no increase in the domestic ceiling price of copper, now 24/2c a lb. ODM turned loose 29,000 tons of zinc from the stockpile and 3,000 tons of rutile, both for defense purposes. . . . Decontrol of secondary tin mill products and mill accumulation plate is expected before long. . . . RFC raised the ceiling on tin to \$1.211/2 a lb., after the Churchill visit, to pay for the tin from Malaya. It is expected the price also will apply to the Bolivian tin. Congress went out of its way to attribute to Stuart Symington, the retiring RFC Administrator, wise judgment in causing the British-Malay interests to come down from a much higher figure, and in holding out against Bolivians who asked \$2.00 a lb. Export-Import Bank is financing a tungsten mine in Bolivia The stockpile now holds 11,340 tons of tin, of which only 7,500 tons is grade A. Until recently our only source of supply came from the government-owned Texas City smelter, about 1700 tons a month.

Metals in tight supply are copper, nickel, cobalt, tin, lead and zinc. . . DPA announced our supply of nickel, scarcest of all metals, is expected to be 132,000 short tons in 1954. Cuba is expected to supply us a little more by the middle of this year.

Saves U.S. over \$80 million

Savings and economies worth more than \$80 million were accounted for by the General Services Administration during the fiscal year 1951. The GSA is in its second year as "housekeeper for the Federal Government."

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A special report by the editors of MACHINE and TOOL BLUE BOOK

Report number

18

Boring Machines . . . part 1

This is the eighteenth in a monthly series of special reports discussing various types of machine tools. Included in this month's special report on gear making machines.

- 1. Methods of establishing the location of holes and flat surfaces.
- 2. Descriptions of late model boring machines.
- 3. Specifications of American-built machines.

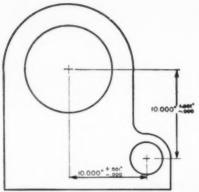
Previously published reports discussed: 1. Thread Rolling; 2. Power Press Brakes; 3, 4, 5. Milling machines; 6. Honing, Lapping, and Superfinishing; 7. Automatic Screw machines; 8. MAPI Replacement Formula; 9, 10. Chucking machines, Turret Lathes, Hand Screw machines; 11. Broaching machines; 12. Shapers, Slotters, Keyseaters; 13, 14, 15. Lathes; 16. Planers, 17. Gear making machines.

Methods of establishing the location of holes and flat surfaces

IF YOU want to locate one point in relation to another you must know how far away it is and in what direction the measurement should be taken, thus any measurement involves distance and direction.

Most dimensions on drawings from which a workpiece is to be machined will be longitudinal, latitudinal and lateral. Each of these directions corresponds to one or the other of the feed movements of the machine when the workpiece is properly aligned. Sometimes it becomes necessary to use an angular measurement, which good designers avoid because of the more difficult procedure required to obtain an angular measurement. An example of each type of measurement is shown in figure 1.

Text and drawings through courtesy of the Giddings & Lewis Machine Tool Company



10 000 to the second se

Square Dimensions

Key Dimension is Angular

1. An example of the use of square and angular dimensioning.

Square dimensions (10.000 laterally and 10.000 vertically) are employed in one drawing. The splndle location may be readily established by using these dimensions directly on the machine scales and verniers to locate the centerlines of these bores.

An angular dimension of 14.142 representing the center-to-center distance between the two bores has been added to the other drawing in figure 1. This dimension carries a plus .001, and a minus .000 tolerance, where as no tolerance is specified on the 10-inch dimension. This means that the important relation between the two bores is the direct distance between centers, and a suitable procedure to prove this by measurement must be devised. This may be done in a variety of ways, but in any event, resolves itself into more of a measuring problem than the other example.

Practically all measurements required in the operation of a horizontal boring machine are either square or parallel to one of the functioning surfaces or centerlines of the machine. When measurements are made from the table or floor plate, they are usually taken vertically at right angles to the top surfaces of these units. When a table T-slot is used, the measurement is at right angles to the slot and parallel to the table top. Likewise, when the spindle is the basis for a reference measurement, the direction is either parallel or at right angles to its centerline.

Exceptions to the foregoing are found on angular flat surfaces, tapered bores, or when certain types of angular dimensions must be checked.

Methods of surface location

To locate a surface requires the use of either a measurement or a dimension which may be translated into a machine setting that will produce the surface. Either the operator measures the distance or the dimension is taken from the drawing and used directly as the basis for machine setting.

For example, when the spindle is moved laterally from a bore just completed, to another boring position, the dimensional relation of the bore centerlines will probably be shown on the drawing. The new machine setting may be reached by transferring a simple

arithmetical calculation to the machine scales and verniers using the applicable drawing dimensions.

When it is necessary to take a measurement as a basis for a machine setting, simple instruments are usually used to establish the roughing cut. Between succeeding cuts on the same surface, precision instruments may be used. When extreme precision is required and commonly used inspection instruments become too unwieldy to handle, precision measuring rods may be used.

The purpose of an accurate measurement in machining work is either to establish or check the location of one machined surface in respect to another. When the location of a machined surface is established on the basis of a measurement from a rough surface, a high order of accuracy is neither required nor warranted. Measurements from rough surfaces are usually intended as a preliminary step to fixing the machining pattern to suit the stock distribution on the workpiece. A machined surface is the only basis from which to establish an accurate measurement for other machining operations dimensionally related to it on the drawing.

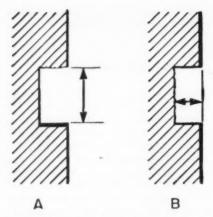
Following are a number of examples which show characteristic elements of surface location. In each case the reference surface for the machine setting has been previously finished. This reference surface is shown by an extra heavy line; the surface to be located and machined is represented by an irregular, rough line. A connecting arrow between the reference surface and the surface to be located corresponds to a drawing dimension that would be shown. In most of these examples it is assumed that only one cut is required to produce the surface to be located and machined. In practice two or more resettings of the machine may be required in order to achieve desired accuracy and finish.

Locating flat surfaces

In the majority of cases, a flat surface is located from some other parallel flat surface, and is generally preferred as a reference surface over a bore or any other machined hole. Figure 2A. This groove is produced using a shell end mill. After finishing the lower surface of the groove, the headstock is raised by a distance equal to the finished width of the groove less the diameter of the cutter. This setting may be obtained from the column vernier, or the micrometer dial on the headstock hand may be used to guage the distance. Ordinarily, several cuts are taken in an operation of this type, and a check measurement is made prior to setting the machine for the finish cut.



"Pssst, Bub, wanna' buy a couple tons of steel?"



Typical cross-sectional elements encountered in locating flat surfaces.

Figure 2B. The machining operation is similar to the one shown in fig. 2A. The machine setting is made by moving the saddle inward from the finished face by an amount which corresponds to the dimension shown. Like the example in fig. 2A, a measurement is taken with an instrument before establishing the saddle position for the final cut. The micrometer dial on the saddle hand feed is used to guage the movement of the saddle to achieve the final setting.

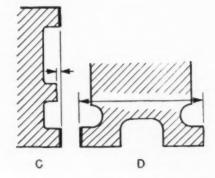
Figure 2C. This operation is functionally identical to the example in fig. 2B. However, if it is assumed that the figure represents a section of a large workpiece, a check measurement is somewhat more difficult to make. Ordinarily, such a measurement requires a straight-edge long enough to span distance between the upper and lower finished faces. The measurement is then made with calipers or an inside micrometer from the straight-edge to the surface being machined.

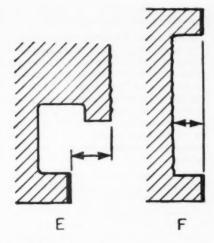
Figure 2D. In this set-up, the work has been turned end-for-end, placing a previously finished flat surface in the rear. A measurement is required, and for ordinary accuracy, may be obtained with a combination scale equipped with a square head. The head and scale are employed as a square after being locked to the dimension corresponding to the face-to-face distance between the surfaces. The head is held against the finished surface, permitting the scale to project in the direction of the cutter. The machine setting is made by moving the saddle until one of the tips of the milling cutter is in contact with the end of the scale.

Figure 2E. A combination scale and square head may be used in essentially the same manner used in fig. 2D. Should close limits be specified between the two surfaces, a straight-edge may be held against the semi-finished surface prior to the finish cut, and a micrometer reading taken. A saddle setting may then be made, using the micrometer dial on the hand feed to guage the final adjustment. Measurement to the tip of the cutter with the scale in place is the same whether this is a milling operation or a facing operation employing a head mounting of the cutter.

Figure 2F. Another example of setting a milling cutter. There are a number of possible ways to reset the saddle to machine the recessed surface, after

2.—Continued





2.—Continued

finishing the projecting faces at the top and bottom of this section. A combination scale and square head may be adjusted and locked so that the scale projecting from the head is equal to the finished distance between the two flat surfaces. The head is squared against the outer finished surface and a line is scribed on the side of the work at the end of the scale. This scribe mark shows where the new finished surface will be when the stock has been removed. The saddle is traversed to boring cutter tips in line with the scribe mark so that it will form the boundary of the cut when table feed is engaged. When close limits are specified, a micrometer measurement between one of the outer faces and the new surface provides an accurate means to set the saddle prior to the final cut.

Figure 2G. The work has been turned end-for end, placing the previously finished surface to be used for reference at the far end of a bore. In order to obtain a measurement, a straight edge is held or clamped against the finished face of the reference surface and it is

positioned to be over the hole formed by the bore. A measuring instrument is pushed through the bore against the straight edge opposite, and this provides the basis for measurement.

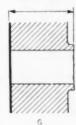
Figure 2H. This is an internal face of the type often machined from a line bar. In mass production work such an operation would often achieve location of internal faces simultaneous to machining one or more other surfaces. The interrelation of the location of these surfaces so machined would thus be inherent with the construction of the bar and the spacing of the cutters.

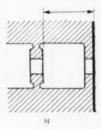
When it is necessary to locate an internal face of this type in the machining operation, it is well to first take a trial cut and then feed either the saddle or spindle to machine off the amount of stock determined from a check measurement. The micrometer dials on either of the hand feeds used in this operation may be employed to guage the distance of feed.

Locating bores and drilled holes

The machine setting for locating a bore or any other finished hole is based on the position of the hole's centerline. Using conventional tool mountings, the location involves the proper setting of two of the machine's feed elements: 1. elevation of the headstock on the column; 2. lateral position of the table, on the table and planer type machines, or

2.—Continued





lateral position of the column on the column runway on floor type machines,

Thus, in this type of machine settings, location is a matter of lateral and vertical position and this is not changed until the operation is completed. This is why the machine scales and verniers are often used to locate holes. The machine setting may usually be obtained by direct application of drawing dimensions to the scales and the machine is locked at the corresponding vernier reading.

Figure 3 gives some arrangements of hole spacing which would be reached in one work setup. In all of these examples the machine scales and verniers may be used to locate the hole centerline. In only one case, Figure 3D, are the dimensions lacking which may be used for a direct vernier calculation and corresponding machine setting. The lateral and vertical distances needed may be obtained by multiplying the center-to-center distance given, by the cosine and sine of 30° degrees respectively. The resulting products represent square dimensions and may be used to establish vernier settings in the same

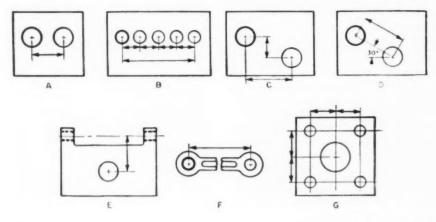
3. Some typical arrangements of hole spacing

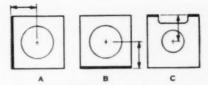
manner as though the lateral and vertical dimensions were specified.

In Figure 3E it is required to locate a bore from a previously machined hole falling at right angles to this setup. A common method of doing this employs a bar which has been made to fit closely into the previously machined holes. A micrometer measurement from this bar to the boring bar will provide the basis for the machine setting. It is, of course, necessary to correct for the bar diameters.

It is common practice to complete all milling work prior to performing boring operations. This makes for accuracy and provides flat surfaces for both setting the work and for reference measurements. Figure 4 gives several examples of bore location with respect to flat milled surfaces.

Figure 4A: When exacting limits are not prescribed, a combination scale and square head may often be used to find lateral location of a bore with respect to a flat surface. The scale and head are set to the specified dimension, deducting half the diameter of the boring bar. The square head is held against the reference surface and the projecting end of the scale is used to bring the work





4. Locating bores from flat surfaces.

and bar in position for machining. The table (or column on runway on the floor type machine) is moved until the bar and the end of the scale are just touching.

When such a measurement exceeds the range of a combination scale, essentially the same procedure may be used by fixing the position of the bar and extending the measurement on the built-in machine scale. The table is moved to bring the reference flat surface in a position to the spindle that is convenient for measurement. Depending on the degree of required accuracy, either a combination scale or a micrometer instrument may be employed to establish the spindle centerline distance to the flat surface. A vernier reading is made on the machine scale at this setting of the table. The dimension indicated by the arrowheads in Figure 4A is then corrected by the amount of distance involved in the measurement. This corrected dimension is arithmetically transposed to the machine scale and the table moved to give this reading on the vernier.

Figure 4B: Vertical spindle settings for boring operations are often made through reference location from a finished surface on the base of the work-piece. This permits using the table surface itself as the point of reference and offers considerable latitude in the use of instruments.

The proper spindle elevation may be determined without requiring any measurement by the operator. The spindle is extended to some point over the table. The headstock is then lowered until the spindle rests on the table top. Hand feed is employed to close the final gap so as not to damage the machine. Knowing the diameter of the spindle, a vernier reading on the vertical column scale at this point furnishes a scale reading from which a headstock setting may be made. Half the spindle diameter deducted from the dimension shown in Figure 4B is the corrected distance to be used on the vertical machine scale. This quantity is added to the vernier reading at the previous setting and the resulting sum shows the new correct vernier reading when the headstock is elevated to the desired bore centerline.

It is to be noted that this procedure may be applied just as well to the foregoing example in Figure 4A. Instead of using the vertical machine scale, the lateral scale on the table (or column runway) is employed. The spindle (or bar) is brought in contact with the vertical finished reference surface and a similar computation as above gives the correct vernier reading for the machine setting.

Figure 4C: In this example, the reference surface is on top the workpiece. Again, a setting may be made without measurement by lowering the spindle or bar on this surface and using the corresponding column vernier reading as a base point for a calculated setting of the headstock.

The headstock may also be set to the centerline of this bore by a simple measurement and a calculated setting. A straight edge is placed on the reference surface and is positioned to overhang the work where the spindle may be brought under it for measurement. When the headstock is set to the right elevation, this measurement should be equal to the specified dimension less half the diameter of either the spindle or bar.

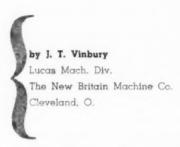
The End

Automatic power positioning spaces operations without using jigs or fixtures

AUTOMATIC power positioning has made a modern production tool out of the boring mill because this device allows the operator to accurately space operations without using jigs or fixtures. To illustrate this feature, the machine will drill or bore a number of holes and then repeat all the operations. spacing them with extreme accuracy. One of the demonstrations to prove this feature is the boring of a number of holes in a plate which are then blued up. The machine will repeat these operations, taking out the bluing from the entire inside diameter of the hole. Once the machine has been set up on a piece, it will repeat all operations on subsequent pieces and be accurate to within fractions of a thousandth of an inch.

 Determining stop point of table indicator with job on table and setting indicator dial to "zero."





The following is a description of how this mechanism operates and a detailed analysis of how a particular job could be set up and done on the boring mill, using this automatic power positioning.

Setting the dial indicators

Figure 1. It is presupposed in this first figure that the job has been clamped to the table and that a precaution has been taken to make sure that all operations to be done on the work are within the total travel of the table and the head. When the work is securely clamped, the table should be run forward so that the adjustable abutment or anvil on the under left hand side of the table cap contacts the plunger on the dial indicator. The operator should then check to see that the indicator is set at zero. It is necessary to set this indicator at zero, as a reference, for on each of the subsequent operations to be done the machine will automatically position itself at zero.



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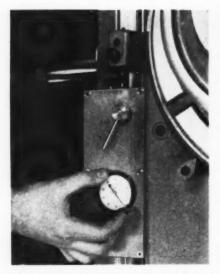
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Determining stop point of head indicator and setting indicator to "zero."

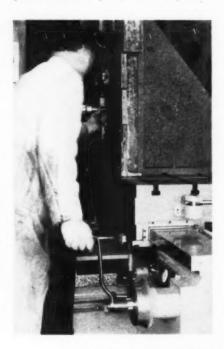
Figure 2. This is simply a repetition of the first step only now we set the indicator at zero on the head. It does not make any difference where the abutment is on the vertical shaft for all we are doing in this operation is making sure that when the plunger on the dial indicator strikes the abutment and the spindle head travel is cut off the dial indicator will be zero.

The reason for performing these two steps is to make certain that the face on the dial indicator is set at zero with the needle. It is important that the rate of feed of both the table and the head be preselected before these two operations are performed, for the position of the needle will vary slightly according to the rate of feed. On jobs where an extremely accurate positioning is required a slow feed should be chosen, for the slower the feed, the more accurately the machine will position itself.

Establishing a reference point for the table

Figure 3. The next step is to get a horizontal reference point for the table to establish the relationship between the spindle and the work piece. This is done as is shown in figure 3. The operator first picks a previously machined surface which he knows is a specified distance from his first operation. He then puts a plug in the spindle taper and by using the hand crank, moves the table forward until the plug touches the machined surface. He now has established a point on the work which he knows is a specified distance from his first operation.

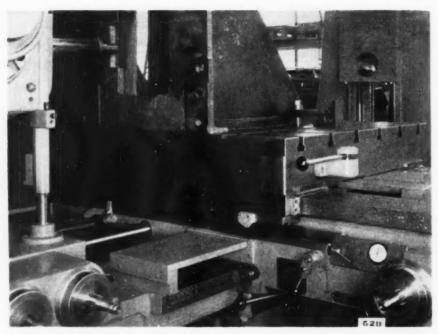
You will notice that the hand crank which manually feeds the table is located on the operator's side of the 3. Adjusting table position relative to spindle reference point on work piece.



MACHINE and TOOL BLUE BOOK



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4. Table dial indicator abutment adjusted to "zero" reading with rods in place which cover dimensions from reference point on work piece to rear-most position on job.

saddle and not around on the front. This makes it possible for the operator to hand crank the machine and pick up his reference point with the spindle at the same time. This enables him to have complete control on both elements, the table and the spindle nose, at the same time.

When the operator has established a contact between this spindle plug and the reference point on the material, he then has a point from which to start all the rest of the table operations.

Selecting the correct rods

Figure 4. After the reference point is established, the operator puts rods in the trough on the saddle which total the exact length of the distance between the reference point and the center line of the first hole to be bored (naturally in putting in these rods he must also subtract half the diameter of the plug which he has in the spindle).

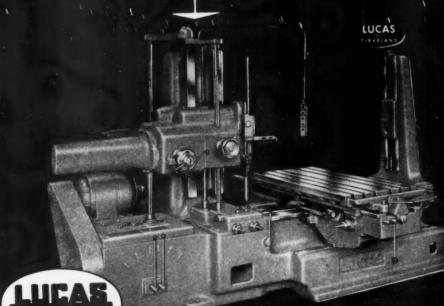
In order to put these rods in place, it is necessary to loosen the adjustable anvil or abutment on the under side of the left hand table cap moving it away from the indicator far enough to accommodate the necessary length of rod. The abutment is clamped in place and by means of the vernier screw adjustment the reading on the dial indicator is set to zero.

The operator has now established the necessary relationship between his table, work, and center line of the spindle so that he may now automatically position the table to any hole center in the work by removing or adding the necessary length of rod.

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Adjusting spindle head height to reference point on work piece, in this case previously finished pad.

positioning for a single job, it is possible to use Pratt and Whitney end measuring rods in conjunction with an inside micrometer with one inch adjustment. However, once a piece has been set up for a production run, five-eighths drill rod can be ground to exact size and marked with the job number and the necessary length in inches. These drill rods may be kept in a separate box which may be numbered according to the job which they go with. This naturally eliminates using the Pratt and Whitney end measuring rod in conjunction with the inside mics.

Establishing a reference point for the head

Figure 5. Here the operator is performing the operation on the head which he did in figure 3 on the table, namely getting a reference point for the vertical travel of his spindle head, using the same spindle plug which was used in figure 3 and moving the head up and down manually. The operator picks out a machined reference point and moves the spindle down until it makes contact. He then establishes a vertical reference point from which to figure out his other vertical operations.

Selecting the correct rods

Figure 6. With reference point for the spindle head still in contact, the operator places a rod which is the length of the distance between the reference point and the center line of the first operation in the trough of the vertical shaft shown in the photograph. This rod is held in the trough by means of a spring clip which can also be seen in the photograph. The operator then

6. Adjusting rod abutment for head to indicator "zero" reading with rod in place which covers dimensions from reference setting of work piece to lowest working position on job.



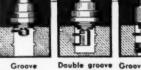
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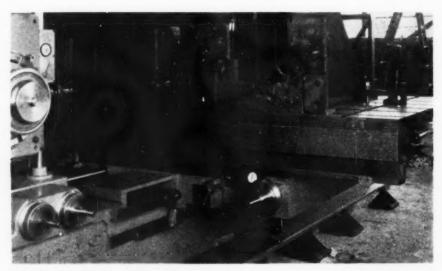
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7. Rods have been removed and head and table automatically positioned to boring setting for first hole.

adjusts the abutment and rod up or down and clamps it as near the zero reading on the indicator as possible. To get a finer adjustment on this indicator, the abutment has a small vernier screw which may be turned up or down to finally locate the indicator on zero. Once this final vernier adjustment is completed, the small vernier screw may be locked in place with the screw which shows on the outside of the abutment.

Now the operator has established both vertical and horizontal reference points. Varying the length of either of these co-ordinates by placing the necessary length of rod in the troughs, he can automatically position the spindle with extreme accuracy for any operation.

Method of operation

Figure 7. In this photograph, all the rods have been taken out of the table trough and also out of the trough on the head. The table is brought forward on rapid traverse and as soon as the abutment contacts the plunger on the

indicator, the table feed throws out of rapid traverse and goes into regular feed. This regular feed moves the table forward a partial turn on the dial and automatically stops the table with the dial reading exactly zero. When the table is stopped, the center line of the spindle will be lined up within a fraction of a thousandth of an inch with the center line of the farthest operation to be done, depending upon the fineness of the feed selected, for the table travel.

The same thing is done with the spindle head; the rods all being out, the spindle head is moved down in rapid traverse and as soon as the plunger on the dial indicator strikes the abutment, the rapid traverse throws out and the head immediately goes into regular feed. The spindle head feeds down below the zero point and then comes back up to the exact zero reading. This is done to take out backlash and to get the weight of the head on the top side of the head operating screw

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Removing spacing rod from head indicator trough preparatory to automatically positioning head for next boring position.

thread. With this indicator reading exactly zero, the center line of the spindle is now exactly on the center line of the farthest operation and the operator can clamp the spindle head and the table and begin to bore, drill, or mill, whichever operation is involved.

From here on the operator of the automatic power positioning is very simple. To move the table forward to the next operation, all the operator does is insert the necessary length of rod in the troughs for both the table and the spindle head travels. He can position the center line of the spindle on the center line of any operation by establishing his horizontal and vertical co-ordinates from the two original reference points.

This automatic power positioning of the table may be accomplished in two ways; (1) by starting with the table all the way forward and feeding it back, inserting the necessary lengths of rods to perform each subsequent operation form rear to front on the work piece or (2) by beginning with the table to the rear with all the necessary rods in the trough and then automatically positioning the table toward the front by removing the necessary number of subsequent operations on the piece from the front to rear.

Either of these two procedures may also be used on the head. The spindle may be dropped to the anvil for the first operation and then raised for the subsequent operation by placing the necessary number of rods in the trough. The opposite of this may be done by moving the spindle up to the highest point with the correct length of rod and then moving it down for each successive operation by removing one rod at a time. You will see the operator doing this in figure 8. He has finished the highest operation and is now removing his top rod, preparatory to dropping the head down for the next



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138

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operation. When the rod is removed, all the operator needs to do is push the button on the pendant control which automatically drops the head down. When the plunger on the dial indicator strikes the top of the next rod, the head automatically stops with the indicator on zero and the spindle is in line with the next operation.

AUTOMATIC POWER POSITIONING (Explanation of diagram)

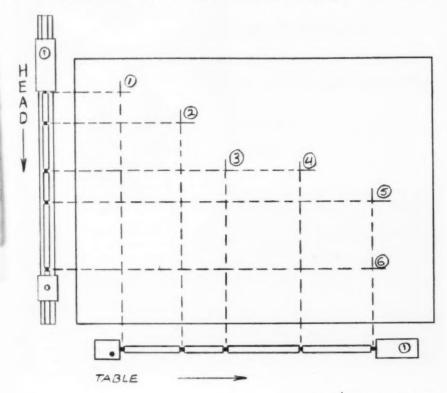
The schematic drawing illustrates the method used to automatically position the table and spindle of the Lucas Boring Mill so that production work is done with a minimum of time and effort expended and also without any sigs or fixtures being necessary.

With all the rods in place as shown in the sketch the machine performs the operation on hole No. 1. To move into position for the second hole the operator (1) removes the top rod on the spindle head and auto-

matically feeds the head dewn onto the next rod where it stops. (2) removes the left hand or farthest rod from the table trough and feeds the table forward until the anvil contacts the next end rod, thereby pushing the rods against the indicator and automatically stopping the table.

To get to hole No. 3 he simply removes the next two rods and automatically feeds the head down and the table forward to the stops.

For hole No. 4 he only removes the next



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There is such a demand for the Schauer Speed Lathe by manufacturers requiring greater efficiency in the polishing, de-burring, grinding, lapping, filing, etc., of small metal and plastic parts, that we were not able to demonstrate these versatile units at the A.S.T.E. Tool Show.

There is a Schauer Speed Lathe to solve every small parts secondary finishing job. Just three out of more than 39 models are illustrated here.

Chuck, collet and vacuum holding fixtures. Single speed, two speed and variable speed motors. Horizontal and vertical spindle models. Bench and pedestal types. Investigate their advantages for your production. You'll save with Schauer! Write for Bulletin 500.

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rod from the table for the spindle height remains the same.

By removing two more rods, one from the head and one from the table, he lines up the spindle with hole No. 5. The table abutinent or anvil is now up against the indicator and there are no rods in the table trough.

For hole No. 6 he removes the remaining rod from the head and the anvil stops the spindle in line. The table is already in line from hole No. 5.

This procedure may be reversed starting with hole No. 6 and placing the rods in the troughs to raise the spindle head and move the table back.

This diagram shows that any operation on any part of the work can be automatically positioned by determining the correct co-ordinates by means of the end measuring rods.

The End

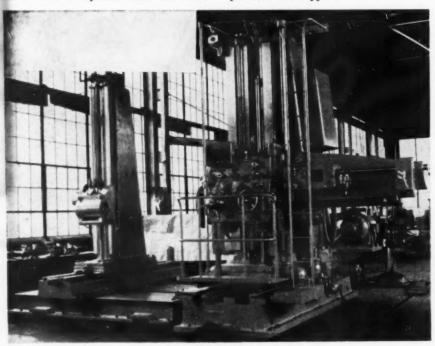
Descriptions of late model boring machines

Ohio 5 FA machine

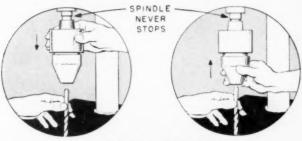
This horizontal boring, drilling and milling machine is made by the Ohio Machine Tool Co., Kenton, O. They are available in floor types and table types. The floor types are made in 5" and 6" spindle diameters and the table types in 5" and 6" spindle diameters. The

machines are producing on continuous production runs as well as on single job runs.

Illustrated is the 5FA horizontal boring, drilling and milling machine with a 5" spindle diameter and a continuous spindle feed of 48". It has a heavy duty open side bar support.



CHANGE TOOLS IN SECONDS WITH THIS FULLY-AUTOMATIC CHUCK



Here's all there is to changing tools:

1. Grip sleeve-pull down-jaws open automatically-tool is released.

2. Insert new tool-push up tapered part-tool is locked in place.



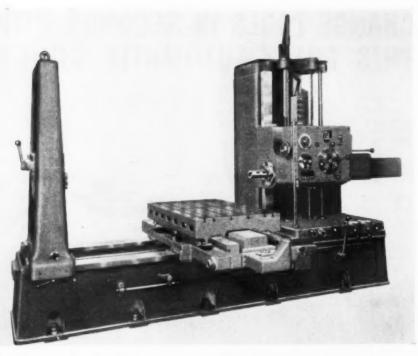
Save time—no more hunting for keys, collets or wrenches. Save tools—smooth, hardened and ground jaws grip tight without chewing into tools. Automatically self-centering...grip increases with load. Save money—one spindle does the work of several. For uninterrupted, precision drilling get Wahlstrom—the only fully-automatic chuck...also used for spotting, drilling and reaming in boring or milling machines. They will also save money in lathe work for burring, turning, filing. Holds two ranges of straight shank tools: from 1/64" to 3/8"; and from 1/32" to 1/2".

For further information see your local industrial supply distributor or write: Wahlstrom-Float-Lock Sales Dept., American Machine & Foundry Co., 511 Fifth Ave., New York 17, N.Y.

See demonstration at A.S.T.E. Show

WAHLSTROM FULLY- CHUCKS

NO KEYS, COLLETS OR WRENCHES



Giddings & Lewis 300 series T & RT

The 300 table and rotary table-type machines are adaptable to the needs of both large and small manufacturers. They are made by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

To permit higher machining accuracy over a longer period of time and provide freedom from galling these machines are equipped with heavy-duty

hardened and ground ways on beds and saddles. Machines are available with electrically-operated positioning.

Electric push button control station is provided on a swiveling pendant.

The rotary table types are especially suited for production work requiring several indexing sequences for the completion of a work piece.

Machine has a great variety of feeds and speeds, all easily and rapidly obtainable.

Portage No. 4 horizontal

Heavy, accurate boring is possible since the entire bed of the machine is a heavy, reinforced, one-piece casting without large, cored openings in the base walls under the column. This provides the rigidity required for the boring unit for high-speed and accurate work. The machine is made by the Portage Machine Co., Akron, O.

The tailstock may be removed from its base without disturbing any other mechanism. Adjustments are provided for repositioning the bushing block when necessary to compensate for wear of nut or screw.

Power rapid traverse is available for any unit having feeds, and is obtained by simply moving the feed engaging lever in the reverse direction. Hand



Winkle - Munning PROPER DESIGN IN WELDED STEEL IMPROVES PRODUCT

. . cuts costs for Hanson-Van examples show how one prominent manufac-

turer has improved the quality of his products And with steel's greater strength and rigidity, fewer pounds of metal are needed. In many cases, machining while cutting costs by converting to welded steel design. When designing for efficient welded steel construction, savings in initial material cost alone generally average 85% to 95%. This is because steel costs less per pound operations required for iron can be minimized or elimi-

nated entirely.

Where product designs utilize the economies of welded

.. cuts weight 50%. De-

plain channel replaces comblicated

Fig. 3. Welded steel saver 30% cost

sign is simpler.

1. Material costs for steel generally range from 5% 15% as compared with castings. steel, cost analyses show that:

0 of

If your costs do not approximate these averages, your product designs should be reappraised. A Lincoln Weld. 3. Welding costs average 50% of total labor costs for 2. Labor costs for fabricating steel are about 30% initial casting purchase costs. fabricating steel.

Inquire about the "Welderign Training Course" your engineers, designers and production men. ing Engineer will granty print, welded steel may have been overlooked.

Engineer will gladly point out

ž

Fig. 4. Stronger, more rugged machine part results when fabricated from steel strip and standard channel. Weight is ext from 3 lbs. to 2 lbs. 4 oz. Cost of this small part is 12% less. ORIGINAL CONSTRUCTION



Fig. 1. Machine bracket for t Von Winkle-Munning, Matawan, weighed 50% more than present steel design. Casting had to be left beary for strength in bub and arm. Design made efficient use of cast iron by providing cored slots. Casting required milling and drilling.

PRESENT WELDED STEEL DESIGN



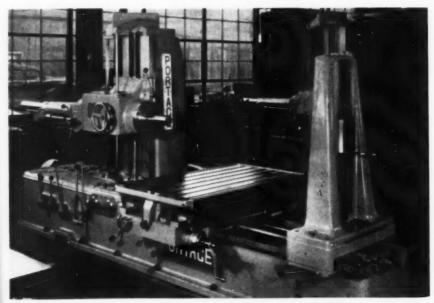
Fig. 2. Finished weldment costs 25% eliminates former breakage experienced in casting. Steel hub, cut from har stock and pre-drilled, is weld-ed to simple formed swel arm in which holes are pre-punched.

MORE SAVINGS

LINCOLN ELECTRIC COMPANY

CLEVELAND 17, OHIO

The World's Largest Manufacturer of Arc Welding Equipment.



adjustment in addition to automatic feeds are provided for the spindle and saddle, spindle travel or movement, table saddle and table.

Filtered oil is automatically and posi-

tively circulated by a chair-driven geared pump through the lubricating system for the shaft bearings and gears for speed changes, feed changes and feed distribution.

Sellers 8" or 10" spindle

This machine is used for boring,



drilling and milling large, heavy work for general machine shop use. It is made by Consolidated Machine Tool Corp., Rochester. N.Y.

The head is a complete power unit from the motor to the spindle nose, containing all speed changes, all feed changes to spindle and power traverse to spindle.

Driving motor is mounted on the head giving the shortest, most efficient and most direct application of power to cutting tools. The main spindle has screw feed which always gives a steady unvarying feeding pressure. This feeding action insures better finish, freedom from tool breakage and is not affected by wear. The entire head mechanism is automatically and continuously oiled.

The head is clamped on column not only from the front to back but from right to left as well. Us Your Production Problems. We'll Help You Solve Them

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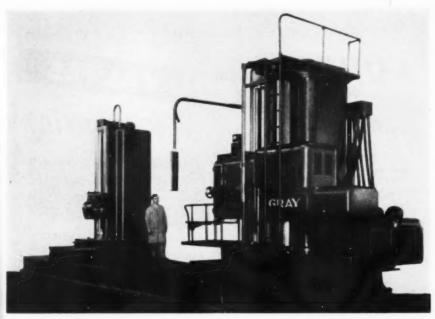


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Air and Hydraulic Equipme LOGANSPORT MACHINE CO. INC.

POWER SPECIALISTS SINCE



Gray 7" floor-type machine

In this horizontal boring, drilling, and milling machine emphasis has been laid on the milling features of the machine. The machine, made by G. A. Gray Co., Cincinnati, O., is capable of transmitting unusually high horse-power for heavy duty carbide milling and at the same time incorporates designs and features which preserve the inherent accuracy of the machine suiting it for precision boring work.

On the 5" and 6" spindle machine 50 h.p. and on the 7" and 8" spindle machine 100 h.p. can be furnished. Machines are equipped with power precision (.00025") setting of multi-ton

column or head with convenient push button control. In the new bar feed, feed pressure is exactly concentric with the bar axis at all times and up to 84" continuous. Uninterrupted bar feed is available on all bar sizes.

Saddle, column base and head ways are regularly furnished with gray non-metallic (laminated plastic) ways which prevent galling and scoring. Important side thrust bearings and gibs are also faced with laminated plastic plates.

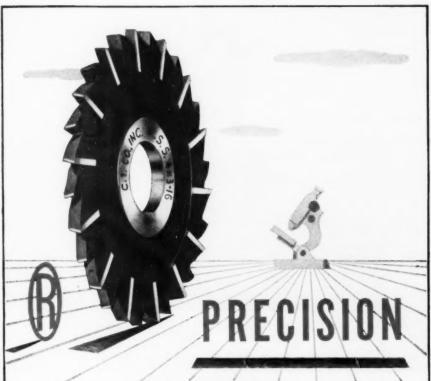
With the Gray insto-shift spindle speed change there is no feeling for clutches; spindle speeds are changed with the flick of a finger in the middle of a cut to suit varying job requirements.

Cincinnati-Gilbert floor type

This floor-type horizontal boring, drilling and milling machine, made by The Cincinnati-Gilbert Machine Tool Co., Cincinnati, O., features non-metallic way blocks to ride between the column base and the runway in

the floor-type machines. Machine has a built-in reversible motor; no long shafts or bevel gears. It has high spindle speeds with a maximum of 1420 r.p.m.

Centralized control are provided for all spindle speeds, feed changes, feed



At Circle R, all production is measured against our own special standards of precision. Microscopic tolerances are so typical of our work that customers have learned to take the fineness of our product for granted.

Precision in every operation behind the scenes has won for our circular metal cutting tools a reputation unexcelled anywhere. We offer them as the most efficient and economical circular cutting tools you can buy.

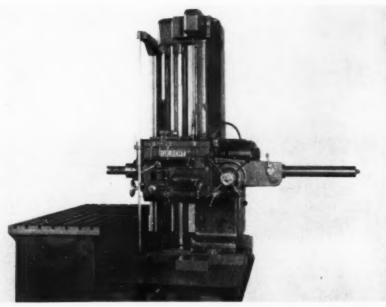
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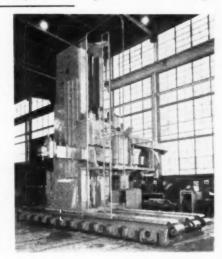
selection, power rapid traverse and the starting and stopping and reversing of spindle and all feeds.

A self priming positive driven pump operates only when the friction clutch is engaged. The oil passes through an oil filter to a distributing station and through pipes to all bearings, gears, etc., including the spindle sleeve bearings and the spindle thrust bearings.

Morton's 84" stroke machine

This is a combination horizontal boring, drilling, milling machine, and draw-cut traveling-head planer made by the Morton Mfg. Co., Muskegon Heights, Mich. Accuracy in milling is obtained through the new ram design which assures rigidity for heavy duty milling. The ram is of the square type, in contrast to the round type usually found on horizontal boring, drilling and milling machines.

Selective incremental feeds are provided for all movements of the column, saddle and ram. A variable speed motor provides a wide range of continuous feeds for all milling motions of the column, saddle and ram, and for boring feeds of the ram. All feed and traverse motions are operated by dual control from the pendant station of operator's platform.





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FEATURES:

Fits most 14" to 20" drill presses

2. Saves speed change time

3. No belts to

4. Hand lever

Wide range 5. of speeds

One unit 6. mounting

One machine

Saves Money

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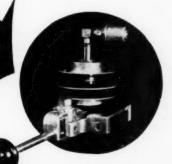
8. Speed change

No belts to

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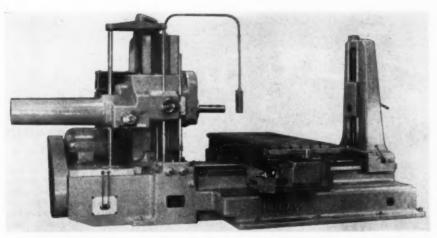
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Made in two models: (1) with use on A-section belts, gives a 6½ to 1 ratio or (2) a 3½ to 1 ratio. By using B-section belts, the larger model will give a 3 to 1 ratio.

NUFACTURING Box 689 Phoenix, Arizono

March, 1952



Lucas 42B-60

This horizontal boring, drilling and milling machine is made by Lucas Machine Div., The New Britain Machine Co., Cleveland, O., and is designed for accurately machining pieces requiring a combination of operations of boring, drilling, milling and tapping. The extra feature, automatic power positioning, makes it ideal for long run repeat operations and for fast set-up, single applications.

Speed and feed change gear boxes

are mounted one above the other. The speed change box is cradled within the bed proper and directly driven through cushioning V-belts. Two change gear levers shift from lowest to highest speed in seconds through hardened, forged gears on splined shafts.

Automatic power positioning is a precision control for automatically positioning the head and table through power feeds to predetermined settings. This automatic control is accurate to within tenths when fine feeds are selected.

Bullard 4" and 5" machines

Some of the previous improvements over machines are the 4-way bed construction, heavier box-type saddles and tables, the anti-friction extension bar support in the heavier rear post, motor-driven lubrication pump for the gear boxes and the improved hydro-dynamic coupling and main drive with brake motor. Chip chutes and cutting lubricant sump are built into the bed casting and fixed precision levels are mounted in pockets in the front and at both ends of the bed. Machine is built by The Bullard Co., Bridgeport, Conn.

The 4-way bed, with a span of 60" across the outer ways, is of heavily rib-

bed construction. Since the four ways are on the same plane, equal support is provided under each way.

Defiance Model No. 22

This model is particularly useful in tool rooms for small jig and die work, at the same time it meets requirements for large volume production work where precision work is desired. This machine is made by the Kempsmith Machine Co., Milwaukee, Wis.

The head unit has a substantial bearing on the column and is counterbalanced to relive the elevating screw of undue strain. The actuating screw is located in the center of the column



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- * PIERCING
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Produce parts requiring any or all of these operations complete in one stroke on the U.S. Multi-Slide®.



To bring labor and handling costs down, secondary operations must be eliminated wherever possible. In the production of precision stampings from call stock the LLS Mul-

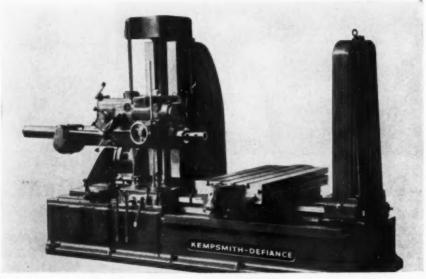
precision stampings from coil stock, the U. S. Multi-Slide © can effect substantial savings by completing a finished part at each stroke of the machine. Many different types of parts which would ordinarily require costly secondary operations can be profitably produced; and, since, parts are produced complete—uniformly and to close tolerances—the number of inspections is also reduced. The illustration above shows a typical part which is produced complete in a U. S. Multi-Slide. The No. 33 Multi-Slide, shown, has a capacity for material up to 2½ "wide. Write for a copy of Bulletin 15-B, containing complete specifications of this and other Multi-Slide machines, and describing their labor saving, time-saving features in full



U. S. TOOL COMPANY, Inc.

AMPERE (East Orange)

U. S. Automatic Press Room Equipment-U. S. Die Sets and Accessorie

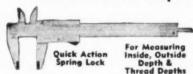


ways between a dovetail guiding edge and a tapered take-up gib which is on the inside edges of the column ways. This arrangement brings the guiding edge, as well as the clamping surfaces, close to the spindle nose and the work, thus assuring a rigid support for the

cutting tools.

The standard table, 24"x36" has a working surface of its entire area. The cross travel of the table is equal to its entire length. The table is mounted on a saddle which has a longitudinal movement on bed ways.

6" Precision Vernier Calipers



The Thumb Pressure on the lock is just enough to move the jaws over the callper. Once the pressure is released, it remains tight and steady. These callpers are made of the finest steel in Germany with hard jaws. Graduated in 1/1000 and 1/128 Vernier.

PRICE \$10.50 Large—Complete with Leather Case

12" Precision Vernier Calipers



HIGHEST ACCURACY

This is a fine precision tool made of the finest steel in Germany with knife hard jaws. There is a fine screw adjustment as shown in the picture. Can also be used for measuring threads.

Graduated in 1/128 Vernier & 1/1000

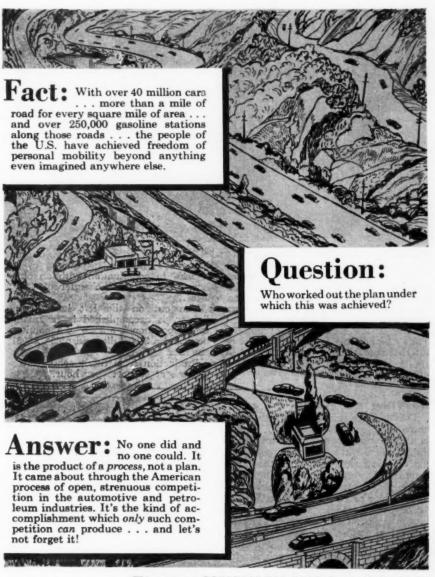
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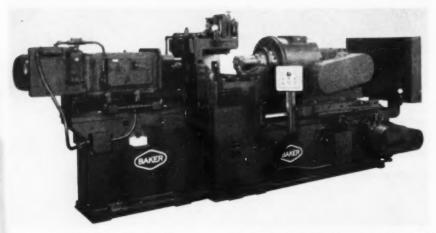
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The competitive system delivers the most to the greatest number of people

MACHINE and TOOL BLUE BOOK WHEATON, ILLINOIS



Two-way horizontal boring for transmission cases

This machine, made by Baker Brothers, Inc., Toledo, O., semi-finish bores an automatic transmission case. The cutter on the right hand unit, here illustrated, has a shank almost equal in size to the forward set of cutters. Thus it is possible to accomplish heavy internal operations in combination with similar operations at the outside surface of the part.

Right hand cutter handles an internal bore 5.970" dia, and a chamfer of 45° x .046" in combination with an outer bore of 7.095" and chamfer of 45° x .046".

The cut on the left hand, being lighter, is accomplished by a smaller unit. Operation is a 3.980" dia. counterbore and a 3.745" dia. and a 45° x .031" chamfer.

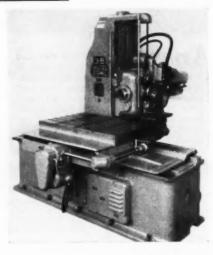
Production from this machine is estimated at 40 parts per hour.

De Vlieg 3-B JIGMIL

This machine, made by De Vlieg Machine Co., Ferndale (Detroit), Mich., is a precision boring, drilling and milling machine with automatic positioning of the machine slides in the horizontal or vertical planes through a sequenced electrical cycle. Hole spacing is thus precisely controlled.

The machine has a power, pushbutton operated mechanism for locking and releasing the cutting tools in and out of the spindle bar. The index table provides a means for the machining of parts from four sides without rechucking.

The JIGMIL, with Microbore equipment makes possible the control of hole sizes to precise limits of accuracy by proven micrometer vernier principle.

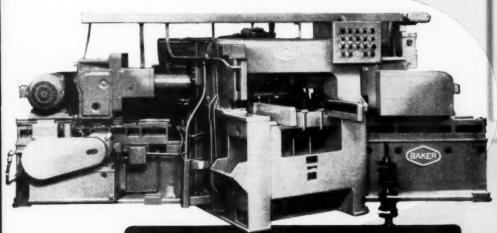


MACHINE and TOOL BLUE BOOK

Speed and Precision with BAKER

SPECIAL MACHINES

Precision productivity is the "watchword" with industry today, which makes BAKER special machines a necessity to keeping up production schedules and reducing part costs per man hour. The machine illustrated is a Baker four-station automatic transfer type machine for drilling 1" diameter lightning holes through crank pin bearings. Utilizing two standard Baker 7½ x 16 horizontal hydraulic feed saddle type drilling units, the Baker is capable of a production rate of 43.8 pieces per hour at 100% efficiency. Outside hydraulic pump sump units furnish hydraulic power for the two 7½ x 16 drilling units. The machine is a four-station, automatic transfer machine. Whatever your drilling problem, consult Baker engineers regarding a Baker special machine that will give you increased productivity at lower cost per man hour.



BAKER BROTHERS, Inc., Toledo, Ohio

DRILLING . . . TAPPING . . . KEYSEATING . . . CONTOUR GRINDING MACHINES

Specifications of American-built machines

The Cincinnati (Gilbert Machine	Tool Co.	C	Cincinnati, Ohio	
Type and Model	SD=Spindle Diameter FS=Feed to Spindle	V=Vertical Travel of Spindle Head D=Dist. Between Bar Support and Face Plate WT=Working Surface of Table (Round) WTS=Working Surface of Table (Square)	No. and Range of Spindle Speeds	No. and Range of Feeds M=Milling Feeds	
Herizontal Boring, Drilling and Milling Machine Rotary Table Type	SD = 3 %". FS = 30"	WT = 44", WTS = 44" V = 36" or 48" or 60" D = 84" or 108"	24-12 to 700 or 16½ to 1000 or 24 to 1420 (60 cycle current) 10 to 575 or 14 to 830 or 20 to 1170 (50 cycle current)	8003 to .128 M=16004 to .267	
Compound Table Type	do	V=36" or 48" or 60" or 72" D=84" or 108" Table Sizes (Overall): 43" x60" or 53" x60" or 53" x60" or 53" x78" or 53" x78" or	do	do	
Floor Type	de	V = With 18" runway = 36" 48", or 60". With 45" runway = 72" 84" or 96" Horizontal travel of column = 36", 48", 96," 108", or 120" Table = 31"x60", or 36"x60" Large adjustable tables = 36"x30" Large adjustable tables = 38"x00", 38"x72", 48"x60", or 48"x72"	do	do	

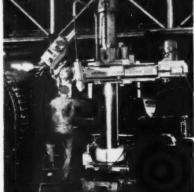
Type and Model	SD=Spindle Diameter ST=Stroke of Spindle	VT=Vertical Travel of Head, minimum HT=Horizontal Travel of Column, minimum	No. and Range of Snindle Speeds	FMS=No. and Range of Feeds to Spindle MF=No. and Range. of Milling Feeds
Horizontal Boring and Drilling Machine Sellers Floor Type 8" or 10" Spindles	SD=8" or 10" ST=72"	VT=8'0"; HT=8'0"	Infinite .95" to 355 r.p.m.	FMS = 240046"-18" MF = Infinite83" to 24"

Type and Model	Spindle SD=Spindle Diameter SF=Spindle Feeding Stroke	Capacity V = Vertical Capacity T = Table Size B = Width Across Ways (4-Way Bed)	No. and Range of Speeds	Feeds, Range in Inches
Horizontal Boring, Drilling and Milling Machines 542B-30	SD=5": SF=30"	V=36"; T=40"x60" B=30"	26-0 to 1200 r.p.m.	.0001" to 1.038"
5428-60	do	V=36"; T=40"x72" B=60"	do	do
5428-120	do	V=36"; T=40"x110" B=120"	do	do
428-30	SD=4": SF=30"	V=36"; T=40"x60" B=30"	do	do
42B-60	do	V=36"; T=40"x72" B=60"	do	do
42B-120	do	V=36"; T=40"x110" B=120"	do	do
41B-24	SD=3"; SF=24"	V=36"; T=34"x48" R=24"	25-13 to 1500 r.p.m.	.0001" to .698
41B-48	do	V=36"; T=34"x60" B=48"	do	do

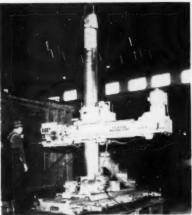
Type and Model	SD=Spindle Diameter B=Speed to Spindle (continuous) and can be increased to	DS=Min. Dist Top of Runway to Spindle Center V=Vertical Travel Spindle Head H=Max. Travel Head TC=Max. Travel of Column	Number and Range of Spindle Speeds T=Working Surface of Table	Number and Range of Feeds FS=Feeds to Syindle RS=Range of Feeds to Spindle FC=Feeds to head and column RC=Range of feeds to head and column
Horizontal, Boring,	the increased to	or Column	Of 1 abse	to nead and column
Drilling and Milling Machine Floor Type 5FA-48	SD=5. B=48" to 72"	DS=31; V=48"; H=72" TC=To suit requirements	18-8.6 to 300; 5.4 to 300 8.5 to 500	FS=6 RS= .0025 to .4 FC=16; RS= .004 to 64
6FA-60	SD=6" B=48" to 72"	DS=31"; V=48"; H=96" TC=To suit requirements	do	do
Table Type 5T-43A	SD=5". B=48" to 72"	do	T=36" x 72" or 48" x 72" or 48" x 84"	do
5T-60A	do	do	18-8.6 to 300; 5.4 to 300 8.5 to 500 T=48" x 84" or 60" x 96" or 60" x 120"	d⊕
6T-60A	SD=6": B=48" to 72"	do	do	do

	Giddings & Lewis Machine Tool Co. Fond Du Lac, Wisconsin				
Type and Model	Spindle Diameter LS=Longtitudinal Travel of Spindle V=Vertical Travel of Headytock	Table WT = Working Surface CT = Cross Travel DT = Max. Dist. Top of Table to Spindle Center ML = Dist. Spindle Sleeve to End Support	Speeds Number and Range	Number and Range of Feeds MR = Number and range of Milling Feeds	
Horizontal Boring Drilling and Milling Machines Table and Rotary Table Type 300-T	SD=3", LS=24"	WT = 24"x42"; CT = 30" DT = 30"; BL = 60"	45.7 in 1600 c.p.m.	18002" to .125" or .0012" to .062" M=2306" to 30.00'	
300-RT	do	WT=30"x36"; CT=36"; DT=33"; BL=72"	do	do	
340-1	SD=4"; LS=30" V=36"	WT=36"x72" CT=60" DT=36"; BL=72"	45-10 to 1300 r.p.m.	36005" to .250" or .002" to .116" M=180125" to 25'	
340-RT	SD=4"; LS=30" V=30"	WT=48"x48"; CT=48" DT=30"; BL=96"	do	do	
350-T	SD=5"; LS=36" V=48"	WT=48"x72"; CT=60" DT=48"	45-7.5 to 467 or 382 to 975 r.p.m.	36005" to .250" or .002" to .120" M = 18-5" to 25"	
350-RT	SD=5"; LS=36" V=42"	WT=60"x60"; CT=72" DT=42"	do	do	
Table Type 56-T	SD=6"; LS=48"	WT=60"x96"; CT=84" DT=72"; BL=120"	24-4 to 200 r.p.m.	18004" to .648"	
560-T (Specifications for Main Spindle)	SD=6"; LS=60"	WT=60"x104; DT=76" CT=84"; BL=122"	Over 100-2 to 400 r.p.m.	21005" to .250" or .010" to .500"	
(Specifications for Auxiliary Spindle	SD=21/2": LS=15"	DT=88"	Over 100-7.5 to 1600 r.p.m.	18002" to .125"	
570-T (Specifications for (Main Spindle)	SD=7"; LS=60"	WT=60"x140"; CT=120" DT=100" BL=146"	Over 100-2 to 400 r.p.m.	21005" to .250" or .010" to .500"	
(Specifications for Auxillary Spindle)	SD=2%"; LS=15"	DT=112"	Over 100-7.5 to 1600 r.p.m.	18002" to .125"	
Floor Types 358-F (Main Spindle)	SD=5"; LS=36"	Vertical Travel Headstock on Columns=72" Horizontal Travel Column on Runway=72" Height of Runway=14" DT(Runway=87"	36-8.5 to 500 r.p.m.		
(High Speed Spindle)	SD=2"; LS=9"	DT (Runway=95%"	36-34 to 2000 r.p.m.	18001" to .062"	
360-F (Main Spindle)	SD=6": LS=48"	do	do	do	
(High Speed Spindle)	SD=2"; LS=9"	do	do	do	
780-F (Main Spindle)	SD=8": 1.S=72"	DT (Runway=129½" Vert. Travel Headstock=96" Horiz. Travel Headstock=96" Height of Runway=15½"	45-1.3 to 240 r.p.m.		
(High Speed Spindle)	SD=314"; LS=18"	DT (Runway)=1441/2" do	36-16 to 960 r.p.m.	18001" to .002" do	

Aukauna DRILLING and UNIVERSAL AND HORIZONTAL TAPPING Machines



Model 125-U drilling and tapping angular holes in high pressure vessels using a 2½" drill and a 2½" pipe tap.



Model 125-MR drilling, reaming and back spot facing holes in a 40 cu yd bucket

PROFIT FROM ANGULAR, VERTICAL AND HORIZONTAL OPERATIONS WITH 7 SETUP

Almost any casting or weldment—of almost any size and shape—can be drilled, tepped or spot-feced in any location accurately, quickly and easily with a KAUKAUNA Machine. Furnished with Universal Head with compound sulvets. Tilting Head or Horizontal Head, all with 360° column swive! Horizontal traverse on rouway and varietal traverse on column to suit requirements.

For portable or fixed location use.



Universal Machine drilling, tapping and daweling racks in place on floor type boring machine runways.



Model 1030 on production setup, drilling, baring and tapping harizanta hales in milling machine bases, columns, headstacks and tables.

Cut your costs on setup time, crane time, fixturing and machine hours. Write for Catalog.

Kaukauna MACHINE CORPORATION

Giddings & Lewis	Machine Tool C	Fond Du Lac, Wisconsin		
560-P (Main Spindle)	SD=6"; LS=60"	DT (Runway) = 96" Vert. Travel Headstock = 72" Horiz. Travel Headstock = 72"	Over 100-2 to 400 r.p.m.	21005" to .250" or .010" to .500" M=.5 to 25"
(High Speed Spindle)	SD=2%"; LS=15"	DT (Runway)=108" do	Over 100-7.5 to 1600 r.p.m.	18002" to 125"
570-F (Main Spindle)	SD=7"; LS=60"	DT (Runway) = 120" Vert. Travel Headstock = 96" Horiz. Travel Headstock = 96"	Same as 560 F	Same as 560-F
	Same os 560-F	DT (Runway)=132"	Same as 560-F	Same as 560-F
Planer Type 350-P (Main Spindle)	SD=5"; LS=36"	DT=72" WT=60"x168"; CT=120" Bed=288"x32" ML=66" (Min.)	8.5 to 500 r.p.m.	.005" to .250" M=.25" to 12.5"/min .5" to 25"/min.
(High Speed Spindle)	SD=2"; LS=9"	DT=80%"	33 to 2000 r.p.m.	.001" to 062" do
360-P (Main Spindle)	SD=6"; LS=48"	Same as 350-P	8.5 to 500 r.p.m.	.005" to .250" M=Same as 350-P
(High Speed Spindle)	Same as 350-P	Same as 350-P	33 to 2000 r.p.m.	Same as 350-P
560-P (Main Spindle)	SD=6"; LS=60"	DT=72"; WT=60"x156" CT=120"; Hed=276"x32" BL=66"	2 to 400 r.p.m.	.005" to .250" .010" to .500" M=.25" to 12.5"/min.
(High Speed Spindle)	SD=2%"; LS=15"	DT=84°	7% to 1600 r.p.m.	.002" to .125"
570-P (Main Spindle)	SD=7"; LS=60"	DT=96"; WT=72"x156" CT=120"; Bed=276"x37" BL=78"	2 to 400 r.p.m.	Same as 560-P
(High Speed Spindle)	SD=2%"; LS=15"	DT=108"	7% to 1600 r.p.m.	Same as 560-P
780-P (Main Spindle)	SD=8"; LS=72"	DT=96"; WT=84"x204" CT=168"; Bed=390"x47"	1.3 to 240 r.p.m.	.005" to .250" M=.58" to 30"/min.
(High Speed Spindle)	SD=3%"; LS=18"	DT=111"	16 to 960 r.p.m.	.001" to .062" M=.58" to 30"/min.

The Bullard (rt, Connecticut			
Type and Model	SD=Spindle Diameter B=Bar Travel (Cantinuous)	Capacity WT=Working Surface Table DT=Max. Dist. Top of Table to Center of Spindle DTR=Max. Dist. Face Plate to Rear Post	Speeds: Number and Range	Feeds; T=Table, Saddle and Head S=Spindle
Horizontal, Boring, Drilling and Milling Machine	SD=4" B=30" continuous and 60" with one resetting	WT=41" x 61"; 42" x 73'%" DT=38"; 50" DTR=72"; 96"	24-8.3 to 1000 r.p.m.	48.Feeds T=.0002" to .132" and .003" to 1.550" S=.0001" to .0792" and .0018" to .930"
5*	SD=5" B=36" continuous and 72" with one resetting	WT=49" x 85" DT=62" DTR=120"	24-7 to 850 r.p.m.	dio

	is Machine Tool			Lac, Wisconsin
Type Model and Size	TT=Travel of Turret Slide TS=Travel of Swivel Head Ram TH=Travel of Side Head Ram VT=Vertical Travel of Side Head	TD=Table Diameter H=Height Under Rail	B=Bore Size in Turret BS=Bore Size in Left Hand Ram	No. and Range of Feeds S=Max. Swing Without Side Head SW=Max. Swing with Side Head
Vertical Boring and Turning Mills 54"	TT=27"; TS=32" TH=26"; VT=36"	TD=52"; H=46"	B=2%"; BS=2%"	16003" to .500" S=57"; SW=56"
64"	TT=27"; TS=32" TH=26"; VT=45"	TD=62"; H=55"	do	16003" to .500" S=67"; \$W=66"
6-Foot	do	TD=72" H=55"	do	16004" to .750" S=76"; SW=75"
6-Foot (Heavy)	TT=32"; TS=42"; TH=30" VT=53"	TD=72"; H=65"	B=3"; BS=3%"	16004" to .750" S=77"; SW=76"
7-Foot	TT=32": TS=42"; TH=30" VT=63"	TD=84"; H=77"	do	16004" to .750" S=89"; SW=88"
8-foot	do	TD=90"; H=88"	do	16004" to .750" S=101"; SW=100"
8-Foot (Heavy)	TS=52"; TH=36"; VT=72"	TD=96"; H=89"	BS=4"	16004" to .750" S=103"; SW=102"
10-Foot	do	TD=120"; H=89"	do	16044" to .750" S=126"; SW=127"
10-Foot (Heavy)	TS=72"; TH=36"; VT=69"	TD=120"; H=86"	do	do
12-Foot	do	TD=144"; H=86"	do	16004" to .750" S=150"; SW=151"
12-16 Foot (Extension)	TS=52"	TD=144"; H=73-65%"	do	16004" to .750" SW=200"

The Kempsmith M				ee, Wisconsir
Type and Size	SD=Spindle Diameter SF=Continuous Feed to Spindle	T=Table Size CT=Cross Travel of Table DT=Max. Dist. Center of Spindle to Top of Table	No. and Range of Speeds	No. and Range of Feeds
Horizontal Boring, Drilling and Milling No. 22 Toolroom	SD=21/4"; SF=18"	T=24"x36"; CT=36"; DT=24"	No. infinitely variable 25 to 1600 r.p.m.	18-,002 to .125
No. 25-A	SD=4"; SF=28"	T=30"x60"; CT=60"; DT=30"	20-12 to 1000 or 4 to 320 r.p.m.	120016 to .490
No. 25-B	do	T=36"x64" CT=64"; DT=36"	40-12 to 1000 or 4 to 1000	de
No. 25-C	do	T=40"x75"; CT=75"; DT=42"	do	de
No. 26-A	SD=5"; SF=36"	T=36"x64"; CT=64" DT=36"	20-12 to 800 or 3.5 to 221 r.p.m.	120025 to .500
No. 26-B	do	T=42"x75"; CT=75"; DT=48"	40-12 to 800 or 3.5 to 800 r.p.m.	do
No. 26-C	do	T=48"x84" CT=75"; DT=60"	do	do

The G. A. Gra	y Co.			Cincinnati, Ohio
Type Model and Size	Spindle SD=Spindle Diameter B=Ear Travel	Capacity T=Table Size DT=Max. Dist. top of Table to Spindle Center DTM=Min. Dist. Top Runway to Spindle Center	Speeds: Number and Range	Feeds: High and Low B=Boring Feed Range T=Table Feed Range H=Head Feed Range C=Column Feed Range M=Milling Feed
Horizontal Boring, Drilling and Milling 5-1/16	SD=5-1/16" B=48"	T=62"x12'2" or 74"x12'2"	24-4% to 900 r.p.m.	B=.10-12 and .02-2.4 T=1.0-120 and .06-8.0 H=1.0-120 and .20-24 C=.353-40.0 and .067-8.
6"	SD=6"; B=48"	T=68"x12%" or 80"x12'2" DT=72"	do	do
7.00	SD=7"; B=48"	T=80"x12'2" or 92"x12'2" DT=84"	24-2½ to 500	B=.10-12 and .01-1.2 T=1.0-12 and .10-12 H=1.0-120 and .10-12 C=:.33-40 and .013-4.0
8"	SD=8"; B=48"	T=80"x12'2" or 96"x12'2" or 108"x12'2" DT=84"	do	do
Floor Type 5-1/16"	SD=5-1/16; B=48"	Vertical Head Travel on Column=72"; Min. Dist. Top at Runway to Spindle Center= 18%"; Height of Runway=18"; Width of Runways over ways=72"	24.4% to 900	B=.1-12 and .02-2.4 M=120 and .2-24
6"	SD=6"; B=48"	do	do	do
7."	SD=?"; B=48"	Vertical Head Travel on Column = 84": Min. Dist. Top of Runway to Spindle Centers = 27": Height of Runway = 24": Width of Runways over ways = 90"	24-2% to 500	B=.1-12 and .01-1.2 M=1-120 and .1-12
8"	SD=7": B=48"	ways=90" do	do	de

The Portage	Machine Company			Akron, Ohio
Type and Model	SD=Spindle Diameter ST=Spindle Traverse continuous FS=Max. Dist, Face Plate to outer Support TS=Max. Dist. Top of Table to Centerline of Spindle	WS=Working Surafce, Table CT=Cross Travel of Table	No. and Range of Spindle Speeds	FMS=No. and Range Feeds to Main Spindle MF=No. and Range of Milling Feeds to Table, Saddle and Heads
Horizontal Boring and Drilling Machine	SD=4". ST=30" FS=7'.6"	WS=36"x60"; CT=48"	18-16 to 610 r.p.m.	FMS=180015"231" MF=18005"659"

"Onside Story" on doubling production at the Minster Machine Co., Minster, Ohio

This GRAY 6" PLANER TYPE BORING MILLING AND DRILLING MACHINE is really delivering "versatility with a punch."

Here's why:

- retary table 84" x 96" permits quick, accurate positioning of multi-ton load.
- · sendant control always within reach to provide instant control
- automatic power clamps reduce manipulating time -insure uniform alignment conditions.
- gray non-metallic ways protect all precision guide surfaces.
- 48 N. P. efficiently transmitted to the cutter



Production times have already been cut in half. Further savings are assured when they "open her up."

planers * milling planers planar type milling machines

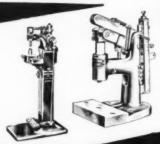
SOLD IN CANADA BY UPTON, BRADEEN AND JAMES, LTD. - SOLD IN LATIN AMERICA BY MACHINE AFFILIATES

Morton Man	Muskegon	Heights, Michigan		
Type and Size	L=Length of Stroke V=Vertical Feed	B=Width and Length of Bed M=Min. and Max. Bottom of Ram to Floor	S=Speeds F=Fceds	BH=Boring Head for Min. Dia. FA=Facing Arm Will Face (Dia.)
Horizontal Bering, Drilling and Milling ⁴⁸ "	L=48", V=48"	B = 48"x12'-0"; M = 36" and 86"	S=20'-75'- Incremental planing Feeds .005', .009 F=30 changes; Boring Feed= .005',1.125', Milling Feed=550=20''	BH=10; FA=28° dia
60"	L=60", V=60"	B=60"x15'0"; M=38" and 98"	do	BH=13; FA=35" dia
72"	L=72", V=72"	B=74"x17'-0" M=38" and 110"	do	BH=17; FA=42" dia
84"	L=84"; V=120"	B=90"x21'-0"; M=46" and 166"	do	BH=17; FA=42" dia
86" All machines	L=86"; V=120"	B=90"x25'-0" M=46" and 166"	do	BH=20; FA=49" dia

De Vlieg Mac	hine Co.	Ferndale (Detroit), Michigan		
Type and Model	SD=Spindle Diameter B=Bar Feed	T=Table Size R=Range on Center of Spindle to Top of Table L=Longitudinal Travel	Speeds: Number and Range	B=Bar Feeds M=Milling Feeds
Horizontal Boring, Drilling and Milling Machines 3-B	SD=3"; B=16"	T=30" x 48" R=1" below, 36" above L=48"	24-23 to 1200 r.p.m.	B=6.001"012" .002"024" M=123"-14"
4-B	SD=4", B=20"	T=36" x 60" R=1" below, 48" above L=60"	24-20 to 900 r.p.m.	B=6.0015".015" .003"030" M=123"-14"

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Thousands of our happy users originally started with us by submitting sample assemblies of their riveting work. Without charge we studied their particular problem, and returned the assembly properly riveted with complete analysis recommondations and questations. It's a FREE service, that may have you time, materials and appellage—and speedup production. Why not write us?



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of such problems—from canners
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Palmer Shile AIR SAVER Leak Proof AIR VALV

Get Split-second Air Control!

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PALMER-SHILE Air Saver air valves give you perfect, leak-proof air power control every splitsecond of machine tool operation. AIR SAVERS are ideally suited to applications where air is used for cleaning, drying, cooling, positioning or ejecting. AIR SAVERS are recommended around punch presses, die casting machinery, drill presses, in reaming, broaching and many other operations. AIR SAVERS may always be depended upon to provide ample air volume for operation of single or multiple jets. AIR SAVERS may be mounted in any position, to operate at any angle unaffected by vibration.

MANUFACTURERS AND OPERATORS: for splitsecond air control and maximum machine tool efficiency, build Air Saver air valves into your new machines. Or install Air Savers in machines you now have in oper-

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RDACC INLET BUSHING

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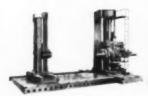
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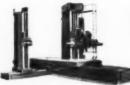
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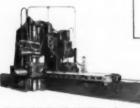
PLOOR TYPE HORIZONTAL BORING, DRILLING AND MILLING MACHINE'S can be used on wide range of unaxival and large work. Sizes: 5°, 6°, 7°, 8° dia, main spindles. Any length floor plates and runways can be built up.



PLANER TYPE HORIZONTAL BORING, DRILL-ING AND MILLING MACHINES for heavy and long work. Sizes 5 to 8 inch main spindles. Independent speeds and feeds for Buble, headstock and column.

Take heavy

OPENSIDE PLANERS meet all standard production demands plus occasional large jobs that need greater table width. Sizes up to 120-inch work width capacities. Setups of difficult work greatly simplified.



PLANER TYPE MILLING MACHINES perform e series of milling cuts on different surfaces at the same time with great accuracy. Sizes from 30 to 120-inch table width capacities. Individual maters for each head.

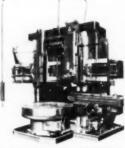




DOUBLE HOUSING PLANERS for extra heavy duty requirements and carbide tooling. Sizes: up to 120-inch work width capacities, if rog, and switch planers in 43°, 48° and 56° capacities.)



TABLE TYPE MORIZONTAL BORING, DRILLING AND MILLING MACMINES provide fine precision and wide capacity for a creat variety of general shop work Sizes 3", 4", 5", 6", 7" and 8" main spindles.



LARGE VERTICAL BORING AND TURNING MILLS for boring, turning, chamfering, fecing, counterboring, gradying and recessing. Sizes: 34-inch to 16-foot capacities.

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the guesswork out of machine tool buying

Take advantage of the Giddings & Lewis 5-Point "Job Analysis" Service

Buying large machine tools is a heavy responsibility. So why take chances? Use the Giddings & Lewis 5-Point "Job Analysis Service." There's no cost, no obligation, G&L Job Analysis Engineers check every consideration of your individual machining problems. They can give you an unbiased recommendation. Decause Giddings & Lewis builds a complete line of sizes and types of planers, planer-millers, vertical boring and turning mills and horizontal boring, drilling and milling machines plus a complete line of accessories and tooling.

Here, in outline form, is the proven technique used by G&L engineers.

1 COMPLETE STUDY OF YOUR JOB OR JOBS. G&L Job Analysis Engineers, working with your engineers, completely analyze your individual job requirements. 2 DETERMINE MOST EFFICIENT MACHINING METHOD Taking into consideration the individual machining requirements. G&L Job Analysis Engineers choose the most efficient machining method.

3 SELECT THE SIZE, KIND AND TYPE OF MACHINE. Using your specific production and work requirements — Got Engineers recommend the exact size, kind and type of machine that will do the job most efficiently.

4 PLAN YOUR OPERATIONS to (11 minimize number of setups and setup time. (2) use modern cutting tools to best advantage. (3) take full advantage of the machine working ranges and capacities. (4) keep operator fatigue to a minimum.

5 RECOMMEND (AND DESIGN IF NECESSARY) THE TOOLS TO USE. If conditions warrant, Gold, will recommend the standard mashine accessories, arrangements and tools you can use to make your equipment more productive —most versatile in application. If special equipment is needed, it will be designed to agreed specifications.

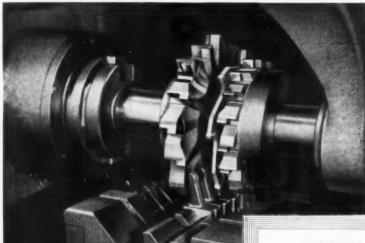
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Barber-Colman

JOB-ENGINEERED TO SUIT

COMBINE CUTS . SPEED OPERATIONS .



JOB FACTS

Operation - Gang-Mill Pressure Levers, 10 Surfaces

Material — SAE 4615 Forgings, 180 Br. Cutters — B-C Job-Engineered Half-Side Mills and Full Side Mills, Carbide-Tipped, Negative Rake Teeth

Feed — 11°/minute, Climb Cut Speed — 360 SFM. on Largest Diameter

FI-to-FI — 100 per Hour

Tool Life — 1900 Pieces Per Gang Sharpening

HOBS . MILLING CUTTERS . REAMERS . HOBBING MACHINES . SHARPENING MACHINES

MILLING CUTTERS

YOUR SPECIAL PROBLEMS

.. PROLONG TOOL LIFE . DUPLICATE ACCURACY

These Carbide-Tipped Gang Cutters
Mill Ten Surfaces At One Time!
Produce 1900 Pieces Per Sharpening!

A good way to beat today's high cost of production is to combine several operations into one.

This job is a good example of how Barber-Colman Milling Cutters, engineered for the specific problem, boost output, save production time and produce maximum number of pieces per cutter life.

Ten different dimensions are machined on tough steel forgings, 4 pieces per load, 100 per hour. Rigid workpiece and cutter mounting permit a fast feed of 11" per minute and 187 cutter r.p.m. — with no sacrifice in tool life. An average of 1900 parts are machined per gang sharpening.

On all orders for milling cutters, Barber-Colman Engineers look first at the job to be done. They then apply the form, number of teeth, tooth shape, tolerances, steel specifications and heat-treatment in the best combination for doing that job. Because of this analysis you get tools designed specifically to solve your problems — not merely milling cutters for removing metal.

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How LAPPING Simplifies Tank Engine Assembly and Production



Tank engine crankcase halves on an 84" Lapmaster. Production is approximately 15 pieces per hour. Surface finish is 10 RMS.



Tank engine cylinder assemblies on a 48° Lapmaster. Eight pieces are lapped simultaneously in a cycle time of 1 minute. Finish is 10 RMS

NO GASKETS USED... LAPMASTERS Improve Flatness and Finish at Increased Production

Gaskets are not used on these joints of this completed tank engine. Consequently there is a great need for an extremely flat surface. However, since production is also a factor there is also a need for equipment to maintain both production and accuracy. Installation of these Lapmasters made it possible to eliminate costly, inaccurate hand lapping methods while consistently maintaining flat surfaces of 10 RMS. High production and consistent accuracy are only two advantages obtainable from Lapmasters. For instance:

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This exclusive feature of Lapmasters makes it possible to handle a variety of sizes and production runs in the same cycle. It also makes it possible to handle a variety of materials in the same cycle. Practically all lapping requirements in all materials, at any production rates can be met with the Lapmaster. We invite your further investigation.



Tank engine rocker box covers on a 48° Lapmaster. Twelve piece are lapped simultaneously in a cycle time of 3 minutes. Finish is 10 RMS.

Get Complete Facts

A glance through this 16 page booklet will record new passibilities for you in precision and production lapping. Actual production figures are given on five different size lapmaters as well as the machine design features and specifications of this outstanding machine Write to Dept. No. 88 3-1.





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New basic concept of metal removal increases tool life several hundred per cent

A BASIC new concept of the physics of metal cutting is being applied to many difficult machining operations with excellent improvements in cutting tool life. In some instances of thread chasing and tapping, increases of 900% have been recorded. In practically all cases speeds and feeds have been increased 25% to 35%.

The process, developed by K. R. Blake, vice president and technical director of the Metalloid Corp., Huntington, Ind., makes use of a new chemical compound known as Metalloid X-20, which acts to limit the movement of the atoms in the crystal lattice of the metal when it is being cut.

This action may be likened to the physical changes occuring in steel when it is hardened by nitriding or carburizing, the most significant difference being that of the depth of penetration of the active elements. The effects of Metalloid X-20 are limited to approximately one molecular layer each side the separated area, due to the extremely short time available for penetration.

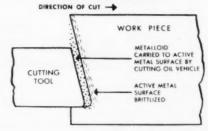
The new product has none of the "heat-transfer" properties of conventional cutting oils, but will use any cutting oil as the vehicle to carry the nascent atoms to the active metal surfaces to limit heat generated. In one

Comparative sketches of conventional methods of metal removal and the new method using Metalloid X-20. It is claimed that an increase of 900% has been recorded on thread chasing and tapping operations.

METAL CUTTING WITH HEAT TRANSFER METHODS DIRECTION OF CUT ---



METAL CUTTING WITH HEAT "LIMITING" NASCENT ATOM PRINCIPLE



example on a deep hole boring job using high speed tools the feed was increased from .004" to .010". The surface feed was increased from 144 SFM to 288 SFM, with tool life increased five times.

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basis for the new metal cutting principle is said to function by reducing and limiting the quantity of heat generated by the plastic flow of the metal during the cutting operation. Consequently, both the tool and work remain much cooler than when machining under ordinary conditions. The reduction of plastic flow in the work also results in greatly improved surface finish quality, the manufacturer states.

The new material limits the plastic

deformation or flow at the point of cut and acts to reduce the temperatures of tool and work well below the critical point where tool hardness is affected. Use of the new material is said to also limit plastic deformation and to eliminate built up edges on tools caused by attachment of the semi-molten metal which solidifies when work is stopped.

The theory behind the successful development of Metalloid X-20 is that the BTU's generated per cu. in. of metal

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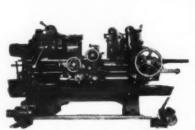
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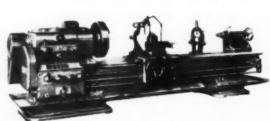
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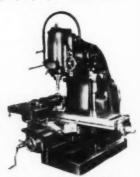
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Abrasive belt grinding

By John E. Hyler

There are some types of work for which belt grinders are particularly well adapted, and as a result, machines using a belt as the abrasive element are often designed and put into use. One outstanding instance of this is the polishing of sheet metals of different kinds. One grinding and polishing machine, designed for handling large stainless steel in the rolling mill, will use commercial abrasive paper, in any specified width, for 12-foot and 16-foot endless belts.

The polishing head, which is supported above the work being processed, has two dynamically balanced pulleys, on which the belt runs. By means of a centrally located, flexible rubber-covered pressure roll, pressure is applied to the running belt by gravity, to hold it in uniform contact with the sheet being polished, all the way across it's width. The sheet itself is held on a

carriage, in such manner that it can be traversed, thus applying the polishing action over the entire surface of the sheet. A lubricant is used in connection, by applying it to the sheet, to reduce the heat that would otherwise be built up in the sheet. Machines of this general type and for this general purpose, in fact, are made by different builders.

Have you ever considered the fact that it is entirely possible to grind and polish the inside of tubing, by means of a flexible abrasive belt? At least one machine has been designed and built that handles such work. Tubing as small as 5%" inside diameter is handled, and thus tubing for use in handling drugs, food products, milk, etc., as well as

Special Report on Boring Machines

This issue contains part 1 of a report on Boring Machines. This will be number 18 in series of special reports dealing with American machine tools. Others will follow in subsequent issues.





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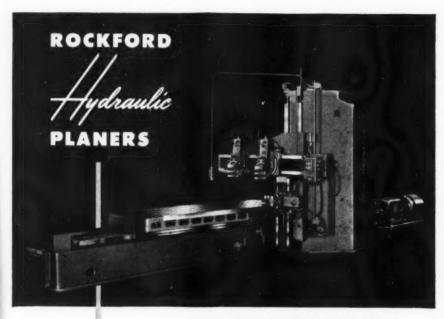
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boiler tubes, oil-handling tubing and like products, can be made perfectly smooth on the inside. The abrasive belt used is passed through the tube. The ends of the belt are then joined to make it endless. The belt is pressed against the inside of the tube, to grind and polish it, by means of an expansible grinding head, attached to a traveling ram rod. Compressed air is passed through the rod and into the head, to expand it against the belt and the tube interior. The tube being ground is mounted on rubber-faced driving and supporting rolls, thus revolving it as the operation proceeds, though both ends are left entirely unobstructed.

The End



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Welded fixtures expedite machining of die castings

AS MAKERS of drilling, tapping and threading machines designed for high production rates, Snow Mfg. Co. Bell-wood, Ill, often supplies fixtures for these machines. This is done partly because in many cases the fixtures are air clamping or air indexing types that, through interconnection with air control on the machine itself, make operations semi-automatic and thereby amplify output materially.

Among parts machine on these tools, equipped with fixtures of the same make are many die castings. As die castings commonly are chosen because they are produced at low cost on a volume basis, it is important that such machining as is needed shall be done rapidly and at minimum cost. The fixtures in question cut this cost significantly and so are worthy of study by both producers and purchasers of die castings.

Fixtures are arc welded

Initially, many of the fixtures were made largely from sand cast components but today nearly all fixtures are made chiefly from steel components



by Herb Downing

Chicago Dist. Welding Eng.
The Lincoln Electric Co.

that are assembled by arc welding. This method of fabrication is exceedingly flexible and economical. It permits quick changes to adapt the fixtures to different parts, avoids investments in patterns and gives the user the benefit of moderate cost with no sacrifice in quality. As the same type of fixture can be made by anyone charged with tooling work, fixtures of this nature deserve more than passing attention.

Take, for example, the fixture illustrated in figure 1. The tubular work piece requires drilling of six radial holes equally spaced around the barrel. To do this drilling, the piece is



1. This fixture whose base is a weldment does automatic air clamping and indexing of the work piece to facilitate the drilling of radial holes through the barrel.

clamped horizontally and indexed three times while holes are drilled clear through in each position. In this case, the fixture base is cut from a steel I-beam welded at one end to a plate that supports an indexing plate. The latter supports a tube containing the indexing head, and also an indexing wheel, pawl and air adjusting plunger and cylinder.

On the base is a kind of "tailstock" on a slide which can be moved along the base and locked by screws. The tailstock includes a plunger in a cylinder and can be moved back against a light compression spring in loading a work piece but is then pushed forward by air pressure to clamp the work piece against the indexing head. When the work piece is clamped, the drill, guided by a bushing, is fed down by air pressure, drills the through hole and is retracted.

When the drill clears the piece is indexed automatically and the drill again feeds down to produce the next hole. This sequence repeats until the holes are completed when the operator removed the work piece. All he need do is to load and unload the work and start the cycle.

For threading the die castings in figure 2, the fixture there shown is used. It also includes an air operated indexing head but in this case the fixture is equipped with radial locating pins carried on the head. All the operator does is to load a die casting on each pin as it moves to the horizontal position. After each indexing the die, carried in a holder on the spindle of the press lowers, chases the thread, reverses and clears the work piece which is then instantly indexed in another space, repeating the cycle.

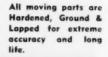
Work pieces drop off as the pins near the bottom and are ready for reloading as they move again to horizontal position. Once the machine is started, it continues to repeat its cycles as fast as pieces can be indexed into position and threaded. Output is well above that

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attained with hand control of all events of the cycle.

A quite different indexing fixture is used to drill cross holes in the die cast lock cylinders, figure 4. In this case a knob, attached to a V-block work holder rocks the holder forward for loading and unloading. When rocked back so that the work piece is under

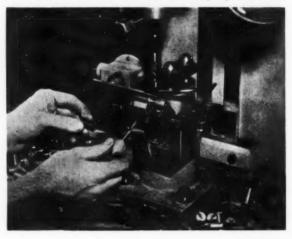
3. Another indexing fixture that in combination with an air controlled Snow threading machine, chases the threads on the die castings shown. The operator only loads the castings on pins of the indexing ring.

the drill and the knob shank enters a notch in a horizontal cross bar, the drill is fed down making one hole and retracting instantly.

This is repeated as the shank is shifted into two other notches to produce other holes before the work piece is lifted out. Control of the drill feed is by a bar so arranged that it contacts a control button each time the shank is rocked into a notch. Five holes per piece are needed but they are too closely spaced to drill all in sequence with this type of indexing. Two end and one center holes are drilled in one setup. Then the index bar is changed and the second and fourth holes are drilled.

A much larger die casting is handled in the fixture, figure 5, for drilling an oil hole in the hub of combination pulley and fan unit. In this setup the work piece is placed on a mandrel that is slid down axially by a handle,

4. Combination rocking and sliding fixture for drilling radial holes in die cast lock cylinders. Control is by the knob whose shank is moved into notches in the bar above it for longitudinal indexing.



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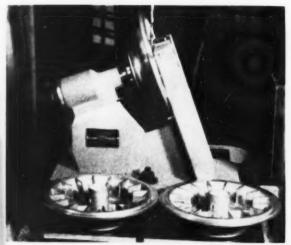
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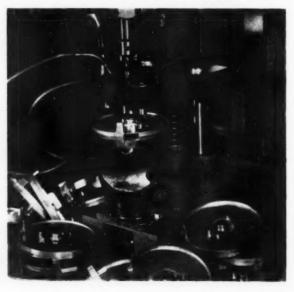


 Simple hand controlled fixture for locating a die casting while an oil hole in the hub, positioned by the end of a sliding mandrel is drilled.

pushed upward into the hub hole and then pushes the work piece forward on an angle until the end of the hub strikes a stop in drilling position where the hub is below the drill bushing. When this is done, the drill spindle is lowered to produce the hole. This is not a very fast operation because the work piece is large and the hole is in such position that loading and unloading are somewhat awkward and consume most of the cycle time.

In the fixture, Fig. 6, it is necessary that the work piece be clamped secure-

6. Air clamping fixture that holds the die castings shown on a locating pedestal while a reamer sizes the cored hole through the hub of the casting.





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CONTROLLED QUALITY FROM Start to Finish

ly after it is placed on the fixture pedestal by hand. This clamping is done by a head supported on guide pins that telescope into base holes. Inside the base is an air plunger that pulls the clamping head downward when air is admitted. This head carries a bushing for a reamer that sizes the cored hole and insures that it is concentric with the work piece and at right angles with the face.

As soon as clamping is effected the reamer feeds down, makes its cut and is withdrawn automatically. When it clears the work piece, the air pressure is removed, the exhaust blows chip away and the coil spring back of the work piece lifts the clamp.

Only a few of the fixtures offered by Snow are shown here but they are typical of those used on die cast parts. Air actuation of the machine expedites the operation and is easily combined with air clamping and indexing when they are desirable. The End

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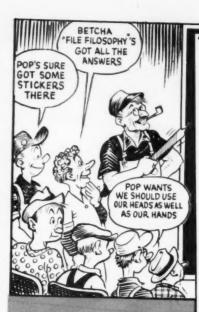
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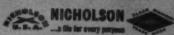


Schooling workers on files and filing under these major rules pays off in many ways:

- 1. Use the right file for the job.
 Means better work, fower rejects.
 - 2. Use files correctly. Speeds work, lengthens file life.
- 3. Use long-lesting files. Conserves steel, keeps file costs low.

Nicholson contributes much through engineered file designs, top quality, and service helps. An excellent manual for the shop "school" is—

"FILE FILEOGPHY," Nicholess's fearouse
45-page "textbook" on kinds, use and
care of files. Gives answers to such
questions as listed here. FREE, Write
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Ming-officiency talks in your plant



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File "quiz" example. "How many questions can you answer?" says Pop the Foreman.

- 1. Why are Mill files so called?
- 2. Why is a Bastard file so called?
- 3. What are the 4 general types of file teeth?
- 4. What are the 4 general degrees of coarseness called in the more commonly used files?
- 5. What are Swiss Pattern files and how, in general, do they differ from American Pattern?
- Special-cut (or specialpurpose) files are generally used on what metals or alloys? Name 4.
- 7. What type files come in flexible as well as rigid form, and for what are they generally used?
- 8. What is drawfiling?
- 9. What is a Lead Float?
- 10. What are the characteristics of a Lathe file?
- As distinguished by cross section, name 8 common shapes of files.
- 12. What extra quality is needed in a file for stainless steel?
- 13. How does a Brass file differ from an ordinary Flat file?
- 14. How do Foundry file teeth differ from those of a Flat file?
- 15. Name 6 "Do's" or "Don'ts" that will lengthen the life of any file.



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MACHINES	PINION CUTTING	BURNISHING MACHINES	MACHINES				
COLD SAWS	MACHINES	COIL WINDING					
CAM SHAPERS	LAPPING MACHINES	MACRINES	CUTTER GRINDERS				
	INSPECTION EQUIPMENT	MECHANICAL & ELEC- TRICAL COMPARATORS	TOOL MAKER'S MICROSCOPES				
	MULTI-DIMENSIONAL INSPECTION MACHINES	BALANCING MACHINES	VICKERS TYPE HARDNESS TESTERS				

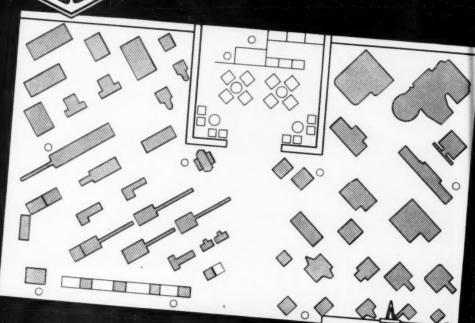
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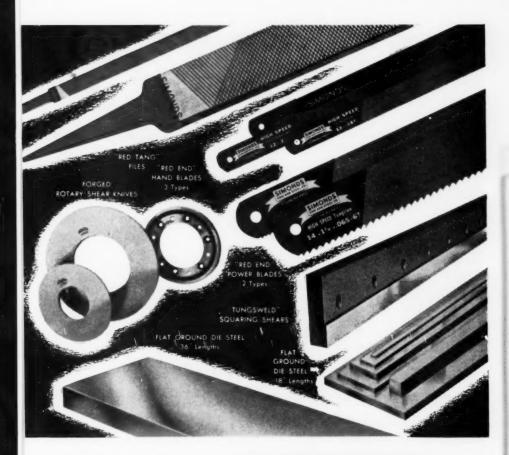
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New cutting fluid eliminates rust, gum, stink

by William F. Schleicher

"TRIM"-the Master Coolant, is the name of a new cutting fluid which eliminates rusting and gumming and has no foul odor. The cutting fluid is the result of several years' intensive research which delved deeply into the causes of gumming and other objectionable features of cutting fluids. Findings of research projects are embodied in this new cutting fluid.

Bacteria causes gumming

Experience indicated that whenever foul odors were present in a cutting fluid they were accompanied by rust, gumming, and frequently dermatitis. Research revealed that bacteria were the chief cause. This discovery led to the belief that if bacteria could be prevented from living in the coolant perhaps the attending ills could also be eliminated (rust, gumming, dermatitis). A clue to this problem was given in the work done by scientists in Europe and America who showed that bacteria of the sulphur reducing type were usually involved.

The prevention of bacterial growth by the use of germicides at first glance appears simple, and so it is in the laboratory. However, under practical conditions it is extremely difficult because the problem of continuous contamination and the machine operator's hands must be considered. Most germicides are caustic and poisonous to the skin, and frequently the cure is worse than the disease. Further, many germicides lose their effectiveness by oxidation from the air. Because bacteria frequently become adjusted to the material designed to prevent their growth, it is not



uncommon that the germicide is powerless, over a period of time, to halt the spread of bacterial growth.

The problem resolved itself into finding a germicide capable of being effective under practical conditions rather than the ideal laboratory conditions, and being successful in avoiding dermatitis

One method in use today is to purge the machine periodically to remove old cutting fluids and gummy deposits. Usually germicidal cleaners are used for this purpose; however, considerable waste of manhour, machine down-time, and loss of production results from this method.

The makers of "TRIM"-the Master Coolant, through its research found an effective germicide compatible with its product. After one year of practical shop tests on actual operations the cutting fluid shows that it will not support sufficient growth of the bacteria which cause foul odors, and is a rust

inhibitor for steel as well as cast iron. It is not adversely affected by various types of water and has not caused gumming of machines. Apparently, the prevention of bacterial growth has solved the various problems which have plagued the metalworking industry for years.

Surprisingly, they also found that removal of the bacteria problem resulted in the coolant preserving its tool life and lubricating effectiveness over much longer periods of time. Whereas some cutting fluids deteriorate because of the bacterial content, this is not true of the new fluid.

Types of cutting fluids

The usual cutting fluids fall into two general classifications: one being a nonwater miscible type known as cutting oils. These are usually composed of petroleum oil with additives such as fatty oils with or without chemical compounds composed of chlorine, sul-



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phur and phosphorous. The other type of cutting fluids are the water miscible, consisting chiefly of petroleum oils made "soluble" or miscible with water by the use of emulsifying agents.

STYLE C

for threading

Recent variations of the water "soluble" or water miscible types include chemical emulsions and chemical solutions whose chief attributes are faster wetting and higher heat conductivity than the conventional "soluble oils." This permits faster metal removal.

Properties of good cutting fluid

A cutting fluid should prevent rust of the machine and of parts being machined; it should not produce objectionable odors, and should prevent damage to the hands of the operator. The cutting should preferably be water clear so that the operator can see the work piece.



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It is claimed by the makers of "TRIM"—the Master Coolant that the short-comings of water miscible coolant have been overcome with their new cutting fluid. While permitting high rates of metal removal, longer tool life, the cutting fluid has also solved the problem of rust, gumming, and stink. The cutting fluid is made by the Master Chemical Co., 538 Erie Street, Toledo, Ohio.

An interesting case history

The Massey-Harris Co., Racine, Wis., manufacturers of farm implements, were having a problem with rust, stink and gum on the machining of cast iron. They found it necessary to clean the sumps and machines at least once a week.

The new cutting fluid was first tried on a Potter & Johnson automatic turret



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lathe. The initial charge was left in the machine for eight weeks. No stink, rust, or gumming resulted at the end of that time. After six months in the machine this still holds true, even after continous operation.

Tools on this job were previously changed once a week, when machines were down for cleaning. Tools are now changed once in every four to six weeks.

The End

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U.S. Patent No. 2,464,813 Other U.S. and foreign patents pending.

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CHICAGO WELCOMES A.S.T.E. MARCH 17-21

WELL OVER 85,000 PERSONS are expected to be on hand for the American Society of Tool Engineer's Industrial Exposition at the International Amphitheater, Chicago, March 17-21. This will be the most complete exposition ever staged by the society. Every square foot of the available space for exhibits was sold shortly after space was made available. 135,000 square feet of floor space will be occupied by manufacturers. Approximately 367 companies are exhibiting everything from stools,



chairs, work benches to cutting tools, coolants, jigs, fixtures, and machine tools. Everything that will aid in the Tooling for Security, theme of the exposition, will be on display.

Layout at Amphitheater

The Amphitheater consists of a main arena flanked on the right side by the South Hall, and on the left by the North Hall—First Floor, see map on following pages. Booth numbers in the South Hall range from 1700 to 2000 inclusive; in the North Hall—First Floor from 1000 to



Chicago's Michigan Boulevard, looking north. In the immediate foreground is Grant Park, to the left is the Conrad Hilton Hotel, formerly the Hotel Stevens.

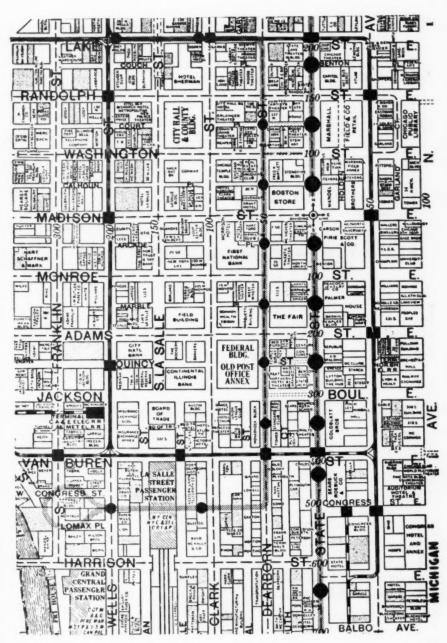


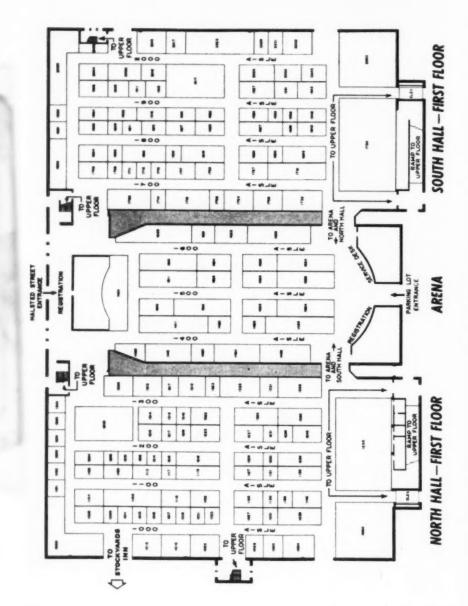
1300 inclusive; in the Main Arena from 1400 to 1600 inclusive.

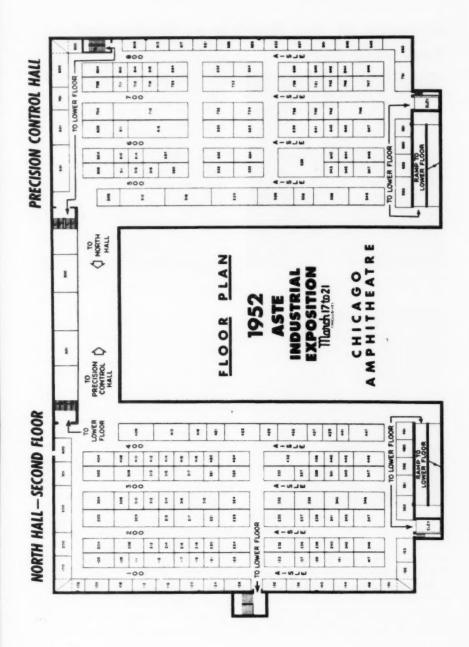
There are two upstairs halls easily accessible by either elevators or stairways. Directly over the North Hall—First Floor, is the North Hall—Second Floor in which booth numbers range from 100 to 400 inclusive. Directly above

Map of Chicago's Loop showing locations of hotels, shops, office buildings and other points of interest. The outlined rectangle is the elevated with small squares indicating station stops. The area bounded by the elevated line is the loop. Heavy doted line, with large dots, is the subway and subway stops.

The Chicago River, looking west, showing some of the drawbridges. In the left center, top, is the Merchandise Mart.







Officers of the American Society of Tool Engineers



President: J. J. Demuth. consulting engineer, St. Louis, 14, Mo.



Second Vice President: Roger F. Waindle, partner and director of research, Cannon-Muskegon Div., The Nugent-Sand Co., Inc.

the South Hall is the Precision Control Hall which will house exhibits relating to inspection, quality control, and measurements.

This Precision Control Hall is a new feature of the exposition, making its



First Vice President: L. B. Bellamy, district manager, Sterling Grinding Wheel Co., Detroit 2, Mich.

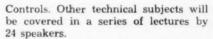
first showing this year. It is planned that future expositions will have a precision control hall. The idea is it gives exhibitors an opportunity to show their wares from the noise and vibration of operating equipment in other booths, which so often in the past have interfered with the operating instruments of precision control manufacturers. The hall will be devoted entirely to manufacturers of measuring instruments, gages, indicators, and other delicate instruments related to quality control.

Feature days to keynote addresses

Over 40 speakers and panel members will deliver papers during the week of the exposition. To maintain some sort of continuity in the themes and topics of the papers special days have been set aside: Monday, Inspection and Quality Control; Tuesday, Metal Cutting; Wednesday, Materials Forming; Thursday, Grinding and Finishing; and Friday, Machine Accessories and Drives and



Third Vice President: **T. J. Donovan. Jr.**. owner, Donovan Co., Philadelphia 22, Pa.



Inspection and Quality Control Day will feature papers and speakers dealing with inspection procedures and quality control. Some of the papers and speakers are (a complete list of papers and speakers will be found on the following pages): "Criteria for Selecting Sampling Methods," by Dr. J. V. Strela; "Fixed-Gage Standards and Practice," by W. H. Gourlie. A panel discussion will deal with turning and forming tolerances.

Metal Cutting Day will have, among other papers and speakers: "Complete Deep Hole Production from Trepanning to Final Finish," by J. S. Ladendorf; "Speeds, Feeds, and Horsepower for Drilling," by C. J. Oxford; "Drill Jig Design for Secondary Operations," by J. I. Karash. The panel discussion will be devoted to drilling.

Grinding and Finishing Day will feature: Finish Grinding Troubles and Remedies," by A. W. Todd; "Automatic Size Control in Finish Grinding," by W. E. Moody. The panel discussion will be on finish grinding.

Machine Accessories, Drives and Con-



Secretary: W. A. Thomas, supervisor, Tool Engineering Dept., Ford Motor Co. of Canada, Ltd., Windsor, Ontario



Treasurer: Howard C. McMillen. plant manager, the Philoo Corp., Bedford, Ind.

trol Day will have papers on: "Analysis of Cost Estimating Principles and Practices," by L. E. Doyle; "Power Chucking," by L. H. Stewart. Fanel discussion will be concerned with machine drives and controls.

Materials Forming Day will have papers on "Multiple Screw Machine Tooling and Methods," by C. R. Mergan; "Die Design for Metal Blanking," by



Asst, Secy-Treasurer: **Dr. H. B. Osborn Jr.,** technical director, TOCCO Div., Ohio Crankshaft Co., Cleveland 1, Ohio.

R. C. Berliner; "Machining and Heattreatment of Boron Steels," by J. D. Graham. The panel discussion will emphasize metal stamping dies and operations.

Business meeting

Concurrently with the exposition the ASTE plans a number of business meetings and activities. The annual meeting of the board of directors is planned for March 15, and the next year's officers will be elected on a meeting to be held the following day by the board.

The installation of officers will take place during the annual banquet on March 20.

Plant tours

A series of forays into 12 different plants have been planned. They include: Clearing Machine Co., Electromotive Div. of G-M; Kropp Forge Co., Aircraft Engine Div. of Ford Motor Co., Lindberg Steel Treating Co., Motorola, Inc., United States Steel Corp., Thor Corp., Scully Jones and Co., International Harvester Co. and others. Complete list will be found on the next pages listing speakers, papers, and plant tours.



Executive Secretary: **H. E. Conrad.** American Society of Tool Engineers, Detroit 21, Mich.

Charles E Wilson to be banquet speaker

The keynote address of the exposition will be Charles E. Wilson, director of the Defense Mobilization Board. Wilson will deliver a major address of national importance to industry. It will be given at the 20th annual banquet of the American Society of Tool Engineers at the Conrad Hilton Hotel, Thursday evening, March 20th.



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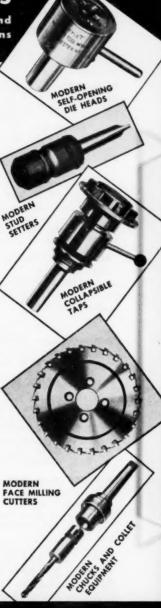
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TECHNICAL PROGRAM: ASTE 20TH ANNUAL MEETING Chicago, Illinois — March 17-21st, 1952

MONDAY, MARCH 17th PRECISION CONTROL DAY

A.M. (Stockyards Inn)

- 9:00 Chairman: Prof. O. W. Boston, Chairman of Production Engrg. Dept. University of Michigan
 - "Cooperation Between Research Centers & Engineering Societies"
 - -by Dr. W. E. Mahin, Director of Research, Armour Research Foundation
- 9:00 Chairman: R. C. Peterson, Manager, Peterson Engineering Co.
 - "The Part of Standards in Better Consumer Relations"
 - by R. E. Gay, President, Bristol Brass Corp.
 - "Relation of the Tool Engineer to Company Standards"
 - -by Dr. John Gaillard, American Standards Assn.
- 9:00 Chairman: R. A. Osborne, Dist. Mgr., Peninsular Steel Co.
 - "Strength of Bolted Assemblies"
 - -by John S. Davey, Asst. Gen. Mgr. of Sls., Russell, Birdsall & Ward Bolt & Nut Company

AFTERNOON (Stockyards Inn)

- 1:30 Chairman: D. E. Hawkinson, Sls. Engr., Greenlee Bros. & Co.
 - "Criteria for Selecting Sampling Methods"
 - -by Dr. J. V. Strela, Staff Statistician, Thompson Products, Inc.
- 2:05 Chairman: F. J. Kampmeier, V. P., Ingersoll Milling Machine Co.
 - "Fixed-Gage Standards and Practice"
 - -by W. H. Gourlie. Standards Engineer, The Sheffield Corporation
- 2:50 Chairman: H. F. Ruehl, Fairbanks, Morse & Company
 - "Production-Line Hardness Testing"
 - -by V. E. Lysaght, Sales Manager, Wilson Mechanical Instrument Division

PANEL DISCUSSION: "TURNING AND FORMING TOLERANCES"

- 3:30 Moderator: R. B. Knoth, Asst. Supt. of. Mfg. Engrg. Western Eelectric Co., Inc.
 - Robt. Eckholm, Chief Inspector, Illinois Tool Works
 - E. L. Fay. Quality Control Manager, Deere & Company
 - J. T. Leyden, Service Engr., Crucible Steel Co. of America
 N. G. Meagley, Mgr., Statistical Quality Control, Willys-Overland Motors. Inc.
 - G. R. Morin, Chief Sales Engr., Jones & Lamson Machine Co.
 - D. J. Williams, Pres., Connecticut Tool & Engineering Co.

EVENING North Ballroom, Conrad Hilton Hotel, former Stevens Hotel

- 8:00 Chairman: E. Y. Seborg, Barnes Drill Company
 - "Contour Milling of Sheet Stock"
 - —by Jesse Daugherty, Consultant, Giddings & Lewis Machine Tool Company Red Lacquer Room, Palmer House
- 8:00 Chairman: G. H. Rigeman, George D. Roper Corporation
 - "Control of Quality on Mass Produced Engineering Parts"
 - -by John Loxham, Managing Director, Sigma Instrument Company, Ltd.
 Normandie Lounge, Conrad Hilton Hotel
- 8:00 Chairman: G. C. Johnson, W. F. and John Barnes Company
 - "Improved Measurement as a Way Toward Safer Tolerances"
 - —by Jacques de Sangy. Sales Director, Societe Genevoise d'Instruments de Physique

HEALD - MILLING MACHINE



No. 1B HEAVY DUTY HORIZONTAL BACK GEARED

Listed at the right are only a few of the many features which make the Heald Milling Machine the preferred equipment in many plants. New features include a quick release lever to simplify feed changes, uniform belt tension and others. Write now for pictorial folder complete with specifications. Your copy is free. Write today.

All Castings Normalized.

QUICK SETTING DIALS—accurately graduated in .001.

BACK GEARS—mounted on ball bearings, are engaged by moving outside lever to forward position. Direct drive in back position. Can be shifted while machine is running.

> EXTRA EQUIPMENT FURNISHED TO ORDER

VERTICAL SPINDLE ATTACH-MENT, COOLANT TANK, PUMP AND PIPING

PROMPT DELIVERY

Dealer's inquiries solicited.

PRECISION BUILT—designed to meet requirements of heavier, higher priced equipment. All dovetails and sliding surfaces ground finished, including table top.

ONE PIECE COLUMN—a heavy one-piece casting.

CAPACITY — Longitudinal feed 20"; Traverse feed 6½"; Vertical feed 13". Longitudinal feed automatic. Hand rapid traverse and vertical feed.

ARBOR SUPPORT — 2 Heavy 21/4" overarm shafts are held rigid by two locks on column.

SPINDLE SPEEDS—16. Range 45 to 1447.

TABLE — Size overall $6\frac{3}{4}$ " κ 31 $\frac{1}{4}$ ". Three $\frac{1}{2}$ " T-slots.

BOX TYPE KNEE—with long 55° ways assuring long wear and extreme accuracy.

SHIPPING WEIGHT — approximately 1500 lbs.

NATIONAL DISTRIBUTORS

<u>General Machinery & Equipment co.</u>

2441 East King Street

P.O. BOX 3128

TULSA 8, OKLAHOMA

PLANT TOURS: (Leave at 9:00 A.M. from Conrad Hilton Hotel)
International Harvester Company, Mfg. Res. Div.
Lindberg Steel Treating Company
Scully Jones and Company
Verson Allsteel Press Company

TUESDAY, MARCH 18th METAL CUTTING DAY

A.M. (Stockyards Inn)

9:00 — Chairman: Vitas Thomas, President, Tomco Products
"Complete Deep Hole Production from Trepanning to Final Finish"

-by J. S. Ladendorf, Deputy Director, Wohlfahrt Engineering and Mfg. Co.

9:00 — Chairman: F. T. Wruk, Exec. V. P., Peerless Machine Co. "Broaching of Internal Gears"

-by J. A. Psenka. Engineer, National Broach & Machine Company

9:00 — Chairman: W. N. Reinhardt, Asst. Supt., Racine Tool & Mach. Co. "Electromechanical Machining of Hard Materials"

-by M. F. Judkins, Chief Engr., Carbide Div., Firth-Sterling Steel & Carbide Corp.

AFTERNOON (Stockyards Inn)

1:30 — Chairman: W. C. Davidson, Tool Engr., Modine Mfg. Co. "Speeds, Feeds and Horsepower for Drilling"

-by C. J. Oxford, Chief Engineer, National Twist Drill & Tool Company

2:05 — Chairman: G. S. Strambeck, Education Coordinator, Racine Vocational School "Precision Hole Locating Methods"

-by F. C. Victory, Chief Engr., Moore Special Tool Company

2:50 — Chairman: G. F. Tigges, Tool Engr., Modine Mfg. Company "Drill Jig Design for Secondary Operations"

-by J. L. Karash, Process Engr., Reliance Electric & Engineering Company

PANEL DISCUSSION: "DRILLING"

3:30 — Moderator: C. C. Waldo, Asst. Master Mechanic, Electromotive Division, G. M. C. M. S. Aljanich, Supt. of Tool Cribs, Caterpillar Tractor Co.

E. A. Brezina, Chg. of Production Design & Application, The Cleveland Twist Drill Co.

J. Y. Riedel. Tool Steel Engineer, Bethlehem Steel Company

R. A. Schafer, Chief Development Engineer, National Automatic Tool Company B. D. Smith, General Supvr., Mechanical Engineering Research,

International Harvester Company

E. Von Hambach, Research & Development Engineer, The Carpenter Steel Company Normandie Lounge, Conrad Hilton Hotel

8:00 — Chairman: O. H. Arndt, Tractor Engrg, Dept. Massey-Harris Co. "Recent Advances in Metal Cutting Science and Practice"

—by Hans Ernst, Research Director and Dr. M. E. Merchant, Senior Research Physicist, Cincinnati Milling Machine Company. North Ballroom, Conrad Hilton Hotel

8:00 — Chairman: R. T. Jones, Asst. Chief Tool Engr., Walker Mfg. Co.

New Developments in Cemented Carbides"

by J. S. Gillespie. Mgr. of Product Sales, and I. L. Wallace. Mgr. of Engineering, Carboloy Department of General Electric Company

Red Lacquer Room, Palmer House

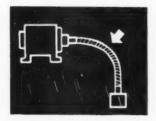
8:00 — Chairman: G. W. Christiansen, Asst. Sales Mgr., Racine Tool and Machine Company

"Dynatomics-A New Concept in Metal Removal"

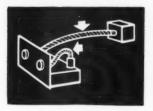
-by Kenneth R. Blake, Consulting Phycisist and V. P. Metalloid Corporation

S.S. White flexible shafts have an important place in your product picture

S.S.White flexible shafts fill a definite need in product design which no other mechanical element or combination of elements can meet as simply and economically.



FOR POWER DRIVES—Use S.S.White flexible shafts to transmit power between two points so located with respect to each other that a solid shaft cannot be used—they'll provide a smooth, dependable power coupling between parts that are not in alignment or must be moved in respect to each other.



FOR REMOTE CONTROL—Use S.S. White flexible shafts to control inaccessible devices from a convenient operating point—for centralizing controls—to bring control around bends and turns or over long distances.

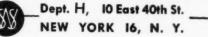
SEND FOR THIS 256-PAGE FLEXIBLE SHAFT HANDBOOK

Complete, authoritative information on flexible shafts sent free if you write for it on your business letterhead.



THE Siblite INDUSTRIAL DIVISION

L MFC. CO.



WESTERN DISTRICT OFFICE: Times Building, Long Beach, California

PLANT TOURS: (Leave 9:00 A.M. from Conrad Hilton Hotel)
Aircraft Engine Division, Ford Motor Company
Clearing Machine Co.
Electromotive Div., General Motors Corp.
Kropp Forge Company
Lindbergh Steel Treating Company
Motorola, Inc.
Scully Jones and Company

WEDNESDAY, MARCH 19th MATERIALS FORMING DAY

A.M. (Stockyards Inn)

9:00 — Chairman: H. M. Chambers, Tool Engr., International Vermiculite Co.
"Tool Engineers and Electroforming"

—by Dr. C. L, Faust, Head, Electromechanical Engineering Division, Battelle Memorial Institute

9:00 — Chairman: R. W. Wallace, Technical Supt., Sangamo Electric Co. "Multiple Screw Machine Tooling & Methods"

—by C. R. Morgan, Consulting Engineer, Cone Automatic Machine Company 9:00 — Chairman: Prof. J. N. Edmondson, Production Div., Industrial Engineering, Ohio State University

'Aptitude Tests Aid Production Personnel"

-by Dr. J. E. King. Director, Industrial Psychology, Inc.

AFTERNOON (Stockyards Inn)

1:30 — Chairman: R. E. Bodendoerfer, Purchasing Agent, J. M. Nash Co. "Die Design for Metal Blanking"

—by R. C. Berliner, Owner, C. B. Cash Mig. Company

2:05 — Chairman: C. E. Miller, Sales Engr., Schlitt Industrial Supply Co. "Die Design for Metal Drawing"

-by C. R. Cory, Engr., Chg. Die Engrg., Fisher Body Div. of G. M. C.

2:50 — Chairman: E. J. Kane, Chief Tool Designer, Sangamo Electric Co. "Selection and Treatment of Die Materials"

-by Dr. S. G. Fletcher. Chief Metallurgist, Lathrobe Electric Steel Company

PANEL DISCUSSION: "METAL STAMPING DIES AND OPERATIONS"

3:30 — Moderator: S. H. Ericson, Chief Tool Engineer, American Flange & Mfg. Company, Inc.

Vasil Georgett. Chief Engineer, Danly Machine Specialties, Inc. Walter Gulliksen, Supt. Worcester Pressed Steel Company

(representing Pressed Metal Institute)

H. F. Jahn, President, B. Jahn Mig. Company (representing National Tool & Die Manufacturers Assn.)

P. F. Rehner, Mgr. of Sales, Carbide Division, Allegheny-Ludlum Steel Corporation

E. J. Reitler, Sales Engineer, Firth Sterling Steel & Carbide Corporation Ralph Weisbeck, Chief Engineer, Wales Strippit Corporation

EVENING

Red Lacquer Room, Palmer House

8:00 — Chairman: H. G. Heimann, Industrial Engr., Clearer Brooks Company "Machining and Heat-treatment of Boron Steels"

-by J. D. Graham, Works Metallurgist, Farm Tractor Div. International Harvester Company

North Ballroom, Conrad Hilton Hotel

8:00 — Chairman: R. W. Lund, Sales Engr., Sterling Grinding Wheel Div.
"Sand Casting with Croning Process Shell Molds"

Davis Boring Tool increases facilities to give you even better deliveries



New 30,000 sq. ft. plant will be producing Davis tools for you by mid-year

Here's one manufacturer who's doing something in 1952 to help you out with deliveries on standard and special boring, turning and planing tools.

Giddings and Lewis Machine Tool Co., recently purchased a new plant for its Davis Boring Tool Division that will increase production of Davis Boring Tools by 50%.

Now's the time — when deliveries look better — to standardize your shop on "Davis Complete Tooling Service." You can increase your production with present equipment, lower your costs and be sure of sharing in the very latest development in tool design. Write for complete details,



DAVIS BORING TOOL DIVISION

GIDDINGS AND LEWIS MACHINE TOOL COMPANY
FOND DU LAC, WISCONSIN

Now 8 amilion tool builden



Black type line baring tool Planer and vertical baring mi



Davis Super Micrometer Stub Boring Tool Sets.

See the complete Davis Tool Line



SHOW

BOOTH 1705 CHICAGO, MARCH 17-21 -by Richard Herold, Mgr., Foundry Products Dept., Chemical Div. The Borden

Normandie Lounge, Conrad Hilton Hotel

8:00 — Chairman: C. A. Woodstock, Chief Engineer, John W. Hobbs Corp. New Precision Performance Specimens for Surface Finish Control

-by Dr. C. R. Lewis, Staff Engineer, Chrysler Corp. "The Surfagage—An Instrument for Roughness Measurement"

-by A. F. Underwood, Head: J. B. Bidwell, Asst. Head: and J. H. Brems, Res. Engr., Mechanical Engineering Dept. 5, General Motors Research Laboratories Div., G. M. C.

PLANT TOURS: (Leave at 9:00 A.M. from Conrad Hilton Hotel) Aircraft Engine Division, Ford Motor Co. Clearing Machine Company Electromotive Division, General Motors Corp. International Harvester Company, Melrose Park Plant Kropp Forge Company Scully Jones & Company Ther Corporation United States Steel Corporation Western Electric Company

THURSDAY, MARCH 20th GRINDING AND FINISHING DAY

A.M. (Stockyards Inn)

9:00 — Chairman: D. H. Brighton, Staff Engr., Planning Dept., Caterpillar Tractor Company "The Functions of Cutting Fluids in Modern High Speed Machining" -by H. A. Erickson, Chief Engineer, D. A .Stuart Oil Co., Ltd.

9:00 — Chairman: R. W. Bayless, Supvr. Education & Training Dept., Caterpillar Tractor "Production Grinding of Cylindrical Parts Requiring Extreme Precision"

-by James Meehan, Sales Division and A. E. Mandeville, Application Engineer, Brown & Sharpe Mig. Co.

9:00 — Chairman: D. I. Hartter, Scheduling Mgr., Caterpillar Tractor Co. "Cupola Deoxidation Improves Machinability of Iron Castings" -by F. S. Kleeman, Consulting Engineer

AFTERNOON (Stockyards Inn)

1:30 - Chairman: J. O. Knight, Factory Mgr., L. R. Nelson Mig. Co., Inc. "Automatic Size Control in Finish Grinding"

-by W. E. Moody, Sales Engr., Bay State Abrasive Products, Inc.

2:05 — Chairman: H. W. Logue, Staff Engr., Planning Dept., Caterpillar Tractor Company "Wheels for Precision Production Grinding" -by B. H. Work. Asst. Sales Mgr., Bonded Products & Grain Div.

The Carborundum Company

2:50 — Chairman: Gordon Swardenski, Planning & Tooling Mgr., Caterpillar Tractor Company

"Finish Grinding Troubles and Remedies"

-by A. W. Todd, Asst. Chief Engr., Van Norman Company

PANEL DISCUSSION: "FINISH GRINDING"

3:30 — Moderator: M. L. Bengtson, V. P., Mercury Engrg. Co.

R. M. Bell. Technical Engr., Hammond Machinery Builders, Inc. R. A. Cole, Vice-President, Production Machine Company

Adam Gabriel, President, Acme Industrial Company J. A. Harrington, Chief Engineer, The DoAll Company

G. M. Lamabe, Master Mechanic, Chevrolet-Toledo Div. of G.M.C.

G. T. Rideout, Sales Engineer, Norton Company

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Save time, money and manpower on any job calling for steel plate components. For assurance of accuracy . . . for protection of your production schedules . . . turn your shearing, punching, pressing and other shaping needs over to By-Products.

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LUKENS

A DIVISION OF LUKENS STEEL COMPANY

EVENING (Conrad Hilton Hotel)

20th Annual Banquet, American Society of Tool Engineers 8:00 - Speaker: Charles E. Wilson, Director of Defense Mobilization

PLANT TOURS: (Leave at 9:00 A.M. from Conrad Hilton Hotel)

Clearing Machine Company

International Harvester Company, Mfg. Research Div. International Harvester Company, Melrose Park Plant

Kropp Forge Company

Lindberg Steel Treating Company

Motorola, Inc.

Scully Jones & Company

Verson Allsteel Press Company

FRIDAY, MARCH 21st MACHINE ACCESSORIES, DRIVES & CONTROL DAY

A.M. (Stockyards Inn)

9:00 - Chairman: R. E. Beebe, Gen. Mgr., Winkelmann Company "Analysis of Cost Estimating Principles & Practices"

-by L. E. Doyle, Assoc. Prof. of Mech. Engrg., University of Illinois

9:00 - Chairman: G. M. Waller, Chief Engr., Brugess Norton Mfg. Co. "Power Chucking"

-by H. L. Stewart, Asst. Sales Mgr., Logansport Machine Company

9:00 - Chairman: S. R. Cope, Pres., Acme School of Design Engrg. "Practical Aspects of Tool & Die Heat Treatment"

-by E. J. Pavesic, Research Dir., Lindberg Steel Treating Company

AFTERNOON (Stockyards Inn)

1:30 - Chairman: J. C. Yoder, Foreman, Martin Machine Co., Inc. "Electronics in Motor Drives"

—by E. H. Vedder, Mgr., Industrial Electronics Control Engrg., Westinghouse Corp.

2:05 — Chairman: B. J. Phillips, Owner, Phillips Auto Parts The Engineer Chooses Pneumatic or Hydraulic Drives."

-by J. C. Hanna, Vice Pres. & Chief Engr., Hanna Engineering Works

2:50 — Chairman: H. J. Braun, Sales Engr., Foote Bros. Gear & Machine Company "Variable-Speed and Adjustable-Speed Mechanical Drives" -byH. G. Keller, Asst. Chief Engr., Link-Belt Co.

PANEL DISCUSSION: "MACHINE DRIVES AND CONTROLS"

3:30 — Moderator: R. O. Knudson, Special Machine Tool Dept., Greenlee Bros. & Company

K. H. Casson, Chief Engineer, Barnes Drill Company

D. B. Enyeart, Design Engr., The Monarch Machine Tool Co.

O. J. Maha, Vice Pres. & Chief Engr., Hannifin Corp. R. W. Pashby, Asst. to Vice Pres., Chg. of Engrg. & Research, Micro Switch Division

B. J. Nelson, Chief Engineer, Foote Bros. Gear and Machine Corp. R. J. Owen, Chief Application Engr., The Louis Allis Company

LANT TOURS: (Leave at 9:00 A.M. from Conrad Hilton Hotel)

Aircraft Engine Division, Ford Motor Company

Clearing Machine Company

International Harvester Company, Mfg. Research Div. International Harvester Company, Melrose Park Plant

Lindberg Steel Treating Company

Scully Jones & Company

Thor Corporation

Verson Allsteel Press Company

Exhibitors-Booth Numbers-Personnel-Products at the A.S.T.E. Show

March 17-21 International Amphitheater, Chicago, Ill.

ACCURATE BUSHING CO., No. 838 437 North Ave., Garwood, N.J.

ACME STEEL PRODUCTS DIVISION. ACME STEEL No. 1226 2840 Archer Ave., Chicago 8, Ill.

Personnel: F. R. Grove; A. G. Denne; E. P. Crim; W. T. Biue; A. G. Karatens; E. Petterson; A. J. Hartley.

Products: Two Acme-Morrison Metal Stitchers, chines for stitching metal to metal or metal to non-metallic materials, such as rubber, asbestos, fibre, hemp, plywood, leather, etc. These machines often replace screws, nails, rivets or spot welding.

ACME TOOL CO., No. 128 71 West Broadway, New York 7, N. Y.

Products: Mechanite line of production tools; Acme Tool Holder (illustrated)

ALLEGHENY LUDLUM STEEL CORP., No. 1218 Brackenridge, Pa.

ACE DRILL CORP., No. 144

Adrian. Michigan.

Personnel: Burton R. Leathley; Edward T. O'Hara; Robert Brennan; L. E. Rogers.

New Products; Hardened, tempered ad ground, high speed steel in long lengths. High Speed steel knock-out pins. High Speed steel punches. Tungsten car-bide cutting tools (solid and tipped).

Products: High Speed steel drills, high speed steel reamers, high speed steel drill blanks, high speed steel knockout pins, high speed steel punches, tung-sten carbide tipped drills and reamers, tungsten carbide solid type drills and reamers.

ACME SCHOOL OF DIE DESIGN ENGINEERING 129 W. Colfax Ave., South Bend 1, Ind.

Preducts: The Cope System for training tool and die design engineers will be exhibited in the Quality Control section of the exposition building. The dis-play will consist of 320 lesson texts (eight volumes) which are published by the Acme School of Die Design Engineering. Inc., for the exclusive use of its franch-sed schools. The texts contain hundreds

Acme Tool Holder

Acme Tool Company



of drawings, formulas and data, and cover pletely all phases of tool engineering, including de-tailing, designing process engineering and estimating. They will be arranged on large boards which will permit interested persons to examine the entire con-

permit the bear of the control of the control of each course.

ADAMAS CABIDE CORP., No. 1301
1000 S. 4th St., Harrison, N.J.
Products: Complete displays of tungsten carbide tool tips, dies and wear parts. Standard tool tips shown will include standard single point tool tips: reamer blanks; wear strips bushings and gage bushings.

Afforent preformed shapes, Illustrating the control of the carbide. blanks; wear strips bushings and gage bushings. Forty different preformed shapes, illustrating the varied shapes which can be produced in carbide, with explanations as to their applications, will also be exhibited.

AFFILIATED SCREW PRODUCTS Co., No. 708
757 Waveland Ave., Chicago, III.
Personnel: R. J. McGrath; Albert Miller; Jim Schuman
New Products: Gage Blanks, handles, locking screw
assemblies for thread ring gages.

ALEMITE DIVISION, STEWART WARNER CORP., Chicago, Ill.

THE ALLEN MANUFACTURING CO., No. 116
133 Sheldon St., Hartford, Conn.
Personnel: W. D. Horner: Henry Michgelson: Ben.
Stair; W. E. Hensel; George Ullring: C. T. Schnell
Priduets: Hex-Socket Set Screws, Socket Head Cap
Screws, Hex-Socket Pipe Plugs, Hex-Socket Shoulder
Screws, Flat Head Cap Screws, Dowel Pins, Hex
Keys, and Allenuts.

Keys, and Allenuts.

ALLIED PRODUCTS CORP., RICHARD BROS.

DIVISION No. 225

1560 E. Milwaukee Ave., Detroit 11, Mich.

Personnel: L. E. Coulter; W. S. Smith; Peter Fortune;

Ray Wilds; J. T. Moriarty; Larry Clouthier; Wm.

Reese; John Newcomb.

Products: R-B Interchangeable Punches and Dies, in
cluding the new extra heavy duty series, with %°

bell lock, for piercing heavy plate.

R-B Clinch Nut Tooling—a new interchangeable

magnetic punch and die button which, in one press

stroke, inserts and clinches type H clinch nuts. No

hole pre-piercing is necessary.

hole pre-piercing is necessary

RB Clinch Nut Tooling

Allied Products Corp., Richard Bros. Div.





Induction heater with work table

Allis-Chalmers Manufacturing Co.

ALLIS-CHALMERS MANUFACTURING CO., No. 17.8 and 1730 Milwaukee I, Wis.

Personnel: J. B. Roe: J. W. Post; F. H. Rumble; J. C. Collier, and Harvey Reinhard. Products: Standard manually-operated 10-KW in-duction bester demonstrating the brazing of tool tips, and complete Texrope V-belt drive line display.

ALLISON COMPANY, THE No. 1204 252 Island Brook Ave., Bridgeport 8, Conn.

Personnel: J. D. Hough; F. W. Hoerber; H. R. Powell; C. A. Nielsen; L. V. Wynkoop; C. D. Cummings; G. J. Casserly.

Producta: Abrasive cutting machines in operation, demonstrating both wet and dry cutting with Allison Rubber Bonded and Resinoid Bonded Abrasive Cutting Wheels

ALPHA CORP., No. 706 Greenwich, Conn.

AMERICAN CYSTOSCOPE MAKERS, INC., No. 825 1241 Lafayette Ave., New York 58, N. Y. Persannel: D. V. Thomas and J. C. Brown, Products: Borcescopes for visual inspection of relatively inaccessible surfaces.

AMERICAN MACHINE & FOUNDRY, No. 1131 Brooklyn, N. Y.

Personnei: W. B. Sherman; Charles Wiedmann; Henry

Personeel: W. B. Sherman, Charles Wiedmann; Henry Person; Cliff Olsen, and B. Wahlstrom Chucks; the %-inch Wahlstrom Tapper; Model 15-8 Drill Press Vise which converts a regular drill press into a radial; work can be drilled from three sides without being removed from the vise; serves as a reliable drill lig for repetitive drilling, insures operator safety and reduces drill breakage. Model 14-10 Band Saw vise made by the Float-Lock Corporation, AMF subsidiary.

AMERICAN MACHINIST (McGraw Hill Publishing Co.) No. 632

New York, N Y.



Model 15-8 FloatLock Universal Safety Vise AMF - Wahlstrom Tool Division

AMERICAN PULLMAX CO., No. 1943

2455 N. Sheffield Ave., Chicago 14, III. Personnel: E. G. Kihistrom; I. Behrendt; O. T. Ham-

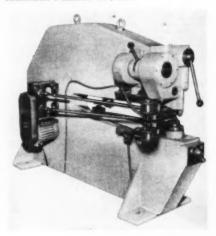
Products: Models P-5 and D-3 machines for cutting and working steel plate up to 11/32" thick; Pullmax "Trimmer." new machine with large throat clearance for trimming bulky metal stampings: "Cadet" Flame Cutter for cutting steel up to 2½" thick,

AMERICAN SIP CORP., No. 1917 New York, N. Y.

AMERICAN SOCIETY OF TOOL ENGINEERS Detroit, Mich.

The Pullmax Major, Model D-3

American Pullmax Co., Inc.







Liquamatic Wet Blasting Machine

American Wheelabrator & Equipt, Corp.

AMERICAN WHEELABRATOR & EQUIPMENT CORP., Nes. 1213 and 1215 555 B. Byrkit Bt., Mishawaka, Ind. Persannal: Otto A. Pfaff, E. B. Bich; John A. Silver; A. E. Lechard; S. S. Deputy; several district sales

representatives.

Products: Model 43 Liquamatte Wet Biasting Machine. reducts: Model 43 Liquismatte Wet Biasting Machine. For ceramics, chemical processing, metalworking and allied industries. Features vertical pump for surry recirculation. Photographs of Wheelabrator machines for cleaning and peening, Typical parts that have been cleaned and peened and which show the advantages and benefits of airless blasting for this process.

B. C. AMES CO., No. 605
131 Lexington St., Waltham 54, Mass,
Personnel; W. Ames; B. C. Ames; and sales repre-

sentatives.

Products: Will have representative showing of standard line of company products.

AMPCO METAL. INC., No. 1119

1715 S. 38th St., Milwaukee 46, Wis.

Personnel: Stuart C. Lawson, J. P. Henry; Oscar B.

Frolman, Elmer E. Whitson; Robert J. Eckl; Henry
A. Mullen; Gordon E. Brown; Jack K. Bybee;
William F. Taff; Robert H. Louthain; and Sam L.
Coddington. eddington.

Coddington.

Coddington.

Gadeta's Stock bars of centrifugally cast Ampco Metal Grade 18. Forming dies and Punches of Ampco Metal, samples of work pieces. Guide Post Bushings of Ampco Metal for die sets. Wear strips of Ampco Metal Sheet and plate. Examples of sand and centrifugal castings, extruded solid and hollow rounds, rolled sheet and plate and forgings of Ampco Alloys. Ampco Trode aluminum bronze welding electrodes. Ampco Weld resistance welding electrodes, tips. wheels, dies. rod, holders, etc. Many representative parts machined from Ampco and Ampcoloy alloys.

AMCHOR COUNTING CO. INC. No. 304

ANCHOR COUPLING CO., INC., No. 304

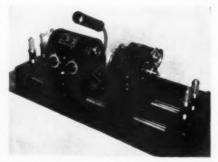
Litertyville, fil.

Products: Anchor split flange type clamp, the use of
which eliminates threaded joints and prevents leaks.

Hydraulic couplings, adaptors and fittings.

ANDERSON & SONS, INC., No. 834
Westfield, Mass.
Personnel: Roland E. Anderson; A. M. Anderson;

ersonnel: Roland E. Anderson; A. M. Anderson; David Rayles; Francis Webster ew Preducts: Polaroid Land Camera for making piant security employee identification badges. This "Hadge Master" features 30 second assembly in the tamper-proof metal badge after a one-minute de-velopment of employee photographs.



Dynograph Balancing Machine

R. B. Annis Company

E. ANDERSON CO., No. 1309

Pertiand, Conn.
Pr ducts: Lusoi, the all-chemical metalworking solution will be the featured product; field reports available showing how Lusoi doubles and triples tool and grinding wheel life, while speeding up production.

ANGIER SALES CORP., Nos. 141 and 143

ANGIER SALES CONT...
Framingham, Mass.
Personnel: Louis S. Kimball: Everett D. Cookson;
Donald W. Light; Sidney M. Davey; J. Russell
Hall; Kenneth L. Heimlich; Ray E. George.
Products: Vapor Rust Preventatives; Reinforced Packaging Paper; Waterproofed Papers; Creped-to-stretch
mackaging papers; Grease proof barriers; Spiral packaging papers; Grease proof Wraps; Reinforced gummed tape.

Wraps; Reinforced gummed tape.

R. B. ANNIS CO., No. 614

1101 N. Delaware St., Indianapolis, Ind.

1101 N. Delaware St., Indianapolis, Ind.

R. B. Annis; R. K. Caskey, H. A. Franz; and

H. G. Carter.

New Products: Overhung type Annis Dynograph Balancing machine designed for balancing pump impeliers, flywheeis, fans, blowers, etc. Accuracy is

much greater than that obtained from single plane

or static type balancer, due to increased sensitivity. or static type balancer, due to increased sensitivity and the fact that the part is suspended in the machine in a manner similar to that in which it will be mounted in actual operation,

Armstrong T-Slot Clamp

Armstrong Bros. Tool Co.



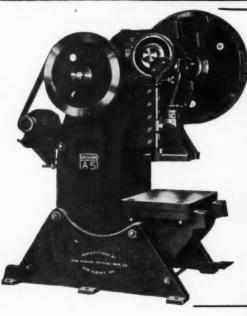
for greater RIGIDITY more ACCURATE cuts.

CRITERION

HEADS

CHILLIUN machine WORKS A full line of adjustable boring heads and bars now available. Heads 1½" to 7" dia. Carbide or high speed bars ¾" to 1¾" dia. Lead screws ground AFTER HARDENING. Ample bearing surface, heat treated parts, interchangeable shanks. Criterion tools are the criterion. Write for free catalog and costs.

9312 SANTA MONICA BLVD. . BEVERLY HILLS, CALIF.



PUNCH PRESSES SERIES A

Liobinson

A-5 Motor Drive 88 Ton Geared Inclinable Punch Press with Anti-Backlash Brake to take care of kick back when using air cushion and heavy spring pressure pads. Timken bearings in clutch wheel and back shaft bearings. Available in 14, 22, 32, 56 and 88 ton capacity. Literature on request.

New Albany Machine Mfg. Co.

New Albany.

Ind.



18" Floor Type Drill Press

Atlas Press Company

Products: Annis dynograph balancing machine, Annis split core current transformer, Annis electric etcher, Annis demagnetizing equipment.

ARMSTRONG BROS. TOOL CO., No. 133
5200 W. Armstrong Ave. Chicago 30, Ill.
Personnel: H. B. Austin; J. N. Labelle; and J. F.

New Products: Armstrong T-Slot Clamps-a drop forged screw clamp for holding work on any machine using a slotted table or work bed.

Products: Armstrong Tool Holders, bits and cutters,

lathe dogs, machine shop specialities, "C" clamps, drop forged wrenches, socket wrenches, and "Armstrong Bros." pipe tools,

ARD EQUIPMENT CORP., No. 1810 Bryan, Ohio

ARROW-HART & HEGEMAN ELECTRIC CO., No. Hartford, Conn.

ARROW TOOL & REAMER CO., No. 147
418 N. Livernois Ave., Detroit 9, Mich.
Personnel: Richard H. Wolfe; Robert H. Wolfe; B.
J. For; N. J. Fisher; J. R. Davis.
New Products: The Arrow Live Center—Featuring a
variety of center inserts that can be readily interchanged while the center body remains in the lathe or other machine.

Products: Standard End Mills; Live Centers: Tungsten-

Carbide tipped and High Speed special cutting tools; Subland Drills; Counterbores; Reamers; Spot-facers and Multiple operation cutting tools.

ATLAS PRESS CO., No. 1510

650 N. Pitcher St., Kalamazoo, Mich.

Personnel: G. C. Nancartow: W. F. Brown: Floyd
Milroy: Fred Hoag: E. C. Garrett; H. B. Hazerodt:
Matt. Hirt; Bill Honig; Elmer Nordgren; and Matt Hirt, Thurow,

Don Thurow, New Products: Clausing 18" Floor Type Drill Presses (illustrated) heavy duty, general purpose drills; feature 5 ball hearing spindle drive assembly; 63.64" diameter spindle, 642" spindle travel, 33"



Magnetic Coolant Separator

Barnes Drill Company

maximum distance spindle to table; exclusive ver nier depth control stop, Atlas 10" Turnomat Produc-Lathe.

tion Laine.

Toducts: Clausing 12" Heavy-Duty Lathes, Atlas 10" Quick-Change Lathe, Atlas 15" 4-spindie Drill Press, Atlas 15" Bench Drill Press, Atlas 15" Bench Drill Press, Atlas 7" Shaper, Atlas Milling Machine.

ATRAX CO., No. 1722 Newington, Conn.

Newington, Conn.

AUSTENAL LABORATORIES, INC., MICROCAST
DIVISION No. 552
224 E. 39th St., New York 16, N. Y.

Personnel: J. M. Uhle; R. Churchill; E. L. White;
D. Ball; R. L. Wiseman; Dr. Paul F. Collins,
Products: Castings made to close tolerance in alloys,
ranging from plain carbon steels to high temperature alloys for industrial use,

AUTOMOTIVE INDUSTRIES MAGAZINE, No. 800 ERIC R. BACHMANN, Machinery-Engineering, No.

1817
Long Island City, N. Y.
Persennel: Eric R. Bachman; and Kurt R. Picard.
New Products: "Kuhlmann" Hand Turret, Production, and Tool Room Lathes; "Nothelfer" fully universal, combination screw-feed and lever-feed Small Precision Millers; "Anthes & Gebhardt" column type Drill Presses with stepless drive; "Reichie & Knoedler" Surface Grinder.
Products: Same as above plus: Swiss Type Automatics, Automatic Screw Machines, Instrument Makers Bench Lathes, Sensitive Drills, Tool & Cutter Grinders.

BARNES DRILL CO., No. 1808
814 Chestnut St., Rockford, III.
Personnel: Noel D. O'Daniell; Leslie Fowler
Products: Barnesdril Magnetic Coolant Separator displayed under actual operating conditions in which
the load is removed from coolant solution.

BARNES CO., W. O., No. 1300 1297 Terminal Ave., Detroit 14, Mich.

E. A. BAUMBACH MANUFACTURING CO., No. 1714

E. A. BAUMBACH MANUFACTURING CO., No. 1714 1812 S. Elibourne Ave., Chicago 23, III. Personnel: Don Rose: Joseph Matis: A. G. Smith; W. Fomrath; Ray Apolskis: Edgar Jarman. New Products: Revealing for the first time actual construction of the E. A. Baumbach Manufacturing Company's complete precision all steel die sets and patented products.

Products: Die Sets and Accessories.





Contour Measuring Projector

Bausch & Lomb Optical Co.

BAUSCH & LOMB OPTICAL CO., No. 813
Rochester, New York
Personnel: M. H. Stevens; P. M. Stochr; M. Seelinger;
J. H. Mead; E. G. Koch; R. E. Neukom,
New Products; New Design—10x, 20x and 40x widefield tubes. Shop Microscope with Transformer

attachment

attachment,
Products; Centour Measuring Projector (illustrated);
Toolmakers Microscope; Shop Microscope; Brinell
Microscope; Widefield Binocular Microscopes; Balcrometer (3" thickness measure); Microscope Body
Tutes.

BAY STATE ABRASIVE PRODUCTS CO., No. 409 Westboro, Mass. Personnel: E. W. Farmer; E. H. Brister W. E. Moody; W. H. Fellows; F. M. Bullen; W. A. Pouyer; and R. A. Green.

and R A Green.

New Products: Resinoid and Vitrified Bond Wheels for grinding carbide tools.

Products: Grinding Wheels and Ailled Abrasive Products.

Resinoid and Vitrified Bond Wheels

Bay State Abrasive Products Co.





Quick Change Tool Holder

Beaver Tool & Engineering Corp.

BEAVER TOOL & ENGINEERING CORP. No. 1219
2850 Rochester Road. Royal Oak, Mich.
Product: Beaver quick-change tool holder, a rigid,
accurate, fast-action device for all types of milling,
drilling and boring machines. Also will show a full
line of adaptors and boring bars for holding standard cutting and boring tools.

THE BECKETT-HARCUM CO., INC., Nos 1116 and

Wilmington, Ohlo

w Products: Beckett Tapping-Drilling Machine
which performs single and multiple tapping, direct
from a drill chuck or standard multiple drill head,
without employing lead screws, clutches or tapping
heads. Precise control of air power is used to feed
the tap through the work. Made in 15° capacity,
single spindle bench and floor types, and in multiple spindle types having two or three heads mounted
on table; 20° capacity models are available in both
floor models or table mounted models. New

THE BELLOWS CO., Nos. 1428 and 1432

THE BELLOWS CO., Nos. 1428 and 1432
Akron 9. Ohio
Personnel: H. B. Link; J. J. Mudd; Harold P. Granger;
W. C. Richards, Jr.; Hale Cadieux; Harold Lamb,
L. A. Boese; L. E. Whitman; Earl Ungrey; R. W.
Waugh; K. W. Heft; F. V. Fuller; T. A. Peterson;
P. S. Linnen; Robert Johnson; D. E. Russell;
L. E. Neafle Jr.; J. W. Head.
New Products: Hydrair—Air powered drilling device,
hydraulically controlled feed rate, electrically actuated Sensitorque—torque sensitive drill press feed

Hydrair Air Powered Drill Unit

The Bellows Company



R AND L TOOL



Booth 408 at the ASTE SHOW Chicago, Mar. 17-21

KNURLING TOOL Available in complete zes. One Hex

range of sizes.

See the R and L line of **Precision Screw** Machine Tools on Display

RELEASING TAP AND DIE HOLDER

Positive clutch action allows release at identical point on all parts, maintaining uni-formity of pieces. Easily ad-justed for right or left hand tapping.



UNIVERSAL TOOL POST

Holds square or flat tools, provides means for adjusting tool in all directions. Tool can be set up close to the chuck.

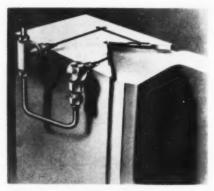
Send for our 28-page Catalog H

1825 BRISTOL ST., PHILA., PA.

TURNING TOOL-UNIVERSAL TOOL POST-FLOATING DRILL HOLDER-CARBIDE AND ROLLER BACKRESTS-REVOLVING STOCK STOP-TAP AND DIE HOLDER-CUT-OFF BLADE HOLDER-TURRET BACKREST HOLDER-RELEASING ACORN DIE HOLDER-KNURLING TOOL-RECESSING TOOL

rests in Tantalum

interchangeable Carbide



Lubrication of Vertical V-Slide

Bijur Lubricating Corporation

to provide automatic drill cleaning for deep hole drilling; Explosion- Proof electrically controlled air powered directional air valve. Products: Air Motors, Air Cylinders and Valves, Hy-draulic controls, Rotary Air Powered Work Feeding Devices, Air Vises, Air Hydraulic Vises, Air Powered Drill Press Feeds, Drill Units,

BENCHMASTER MANUFACTURING CO., No. 1805
1835 Rosecrans Ave., Gardena, Calif.
Persannel: Milton Grey, Gerald Florence
New Products: Stress-Engineered Arbor Presses
Products: Horizontal and vertical milling machines in
tool room models. The complete Benchmaster line of
punch presses, from the 1-ton Midget Press to the
7th-ton press. Including the 4-ton standard and
deen throat-models. 7½-ton press incleep throat-models

Blake Flute Grinder

Edw. Blake Company



BENDIX WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO., No. 1717 Elyria, Ohio

BIJUR LUBRICATING CORP., No. 641

Rochelle Park, N. J.

Personnel: W. O. Wright; J. L. Parker; F. M. Hewitt;
R. L. Gruenert; C. D. Fiske; and D. M. Dingman

Products: Techniques and equipment developed to noive
the current lubrication problems of the tool engineer, the current lubrication problems of the tool engineer. Custom engineered designs for specific types of bearings will be shown as well as new methods of lubricant application. Among the problems solved will be the proper lubrication of both the vertical and horizontal "V" slide, the vertical guide post and the horizontal doctail way. In all case, it will be shown how the problem-solving lubricating equipment is build for accountage that the proper is the problem of th ment is built in as an integral part of the machine.

BLACK DRILL CO., No. 446 1374 E. 222nd St., Cleveland 17, Ohio

EDWARD BLAKE CO., No. 1711
437 Cherry St., West Newton, 65, Mass.
Personnel: Edward Blake; Peter Pedicini; Wayne
Davies; Lester M. Gill; George McNerney; George
W. Cordonna; David M. Warren; T. E. Dimke;
C. W. Davidson; Fred Kern; W. C. Towne; C. W.
Draeger; E. J. Schneider; E. S. Drowne, Jr.;
Gordon Bennett.

C. W. Davidson; Fred Kern; W. C. Towne; C. W. Draeger; E. J. Schneider; E. S. Drowne, Jr.; Gordon Bennett
Products: Blake Flute Grinder which provides the positive mechanical controls necessary for the accurate, speedy and easy sharpening of either the straight flutes or spiral points of taps. By properly controlling rake angle and insuring uniform flute intervals by correct indexing, this machine increases both the accuracy and the life of the taps. Also to be shown: Blake Tap Chamfer Grinder, Black Diamond Precision Drill Grinder. Waltham Cutter Sharpener, University Surface Finish Standards.

HENRY P. BOGGIS & CO., No. 1709
708 E. 163rd St., Cleveland 10. Ohio
Personnel: Henry P. Boggis; Frank Smocinski,
Products: Hybeo Tap Sharpening Equipment, including
Model 1100 Hybeo Tap Grinder (Illustrated) which
completely reconditions taps, grinding the chamfers,
flutes and spiral points. The unit's capacity is No.
0 machine screw to 1½" hand taps, %" to 1" pipe
taps. Machine is shown under power.

Model 1100 Hybco Tap Grinder

Henry P. Boggis & Co.





No. 1650 Series Drill Press

Boice-Crane Company

BOICE-CRANE CO., No. 136
930 W. Central Ave., Toledo 6, Ohio
Personnel: M. H. Buehrer; Stuart Tate; Robert Kemp;
and Richard Cashmore.
New Products: 1650 Series Drill Presses—only second
public showing of the new ½" series. Operating
under power will be both single and multiple spindle

under power wit be both single and mattere spindle drilling and tapping units.

Products: Metal Cutting Band Saws, Combination Con-tour Saw-Band Filer, Abrasive Grinding Machines, and Drill Presses,

and Drill Presses.

BOKUM TOOL CO., No. 121

14775 Wildemere Ave., Detroit 21, Mich.

BOYAR-SCHULTZ CORP., No. 1438

2110 Walnut St., Chicago 12, III.

Personnel: The entire sales force of Boyar-Schultz

Corporation including Walter H. Brooke; Willard

J. Sullivan; Charles Obstefelder; Charles Dussman;

and Andrew Watters.

Products: The complete line of Boyar-Schultz Screw

and Andrew Watters.

Products: The complete line of Boyar-Schultz Screw
Machine Tools, also an operating screw machine for
demonstrating these tools. Booth will also display
the No. 6-12 Surface Grinder featuring several new
developments. Both Boyar-Schultz Profile Grinders
will also be shown, All machine tools will be wired
and in full operation.

BRAMSON PUBLISHING CO No. 220 Detroit, Mich.

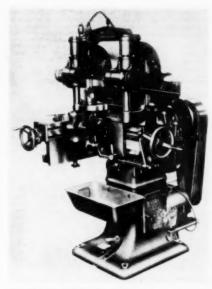
BRINNELL CO., No. 1916

THE BRISTOL CO., No. 311 Waterbury, Conn.

Waterbury, Conn.

BRITISH INDUSTRIES CORP., No. 1205
163 Duane St., New York 13, N. Y.

Personnel: Leonard Carduner: Milton DD. Thalberg:
Irwin Lubalin; Irwing Hoffman; Victor Schaffzin;
Edward Wnuk; William Jackson; William T, Warren;
A. Siegel; A. J. Hayward; F. J. Allen; A. B. Mills;
L. Hinkley; R. G. Longley; A. J. Abbey; J. Townsend; F. E. Staliworthy; and F. M. Shaw,
New Products: Shapers, Lathes, Radial Drills, Milling
Machines, Automatics, Dieing Presses, Tool & Cutter
Grinders: Engraving Machines,
Products: Shapers, (including the No. 32 Essex Punch
Shaper, Illustrated), Lathes, Radial Drills, Milling
Machines, Automatics, Dieing Presses, Tool & Cut-



The Essex Punch Shaper

British Industries Corp.

ter Grinders, Engraving Machines, Die Casting Machines.

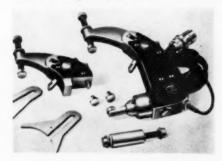
BROWN & SHARPE MFG. CO., No. 1435

BROWN & SHARPE MFG. CO., No. 1435
Providence 1, R. I.
Persamel: Executive and sales directors from the
Providence plant as well as personnel from the
Brown & Sharpe Chicago office.
New Products: Micrometer calipers with stainless steel
spindle and hardened and ground threads, carbide
measuring faces and other advanced features; the
new Electronic Caliper Gage (illustrated) with adjustable measuring pressure for in-the-machine
measurements. easurements.

Products: A complete line of precision measuring tools,

Electronic Caliper Gage

Brown & Sharpe Mfg. Co.



electronic measuring and gaging equipment; Jo-hansson gage blocks and accessories; photographic enlargements of electronic inspecting, sorting and gaging equipment with manual and automatic loadring and disposal; arbors, adapters and collets, per-manent magnet chucks; screw machine tools; surface plates; bench centers and other machine shop equip-ment. Also specimens of B & S rotary geared, vane; centrifugal and motor driven pumps,

CHARLES BRUNING CO., INC.,

4700 Montrose Ave., Chicago 41, Ili.
Personnel: R. Beck, W. R. Fortney: F. DiCanio, R. Buckley, I. Hawley, V. H. Murphy; J. Owens: P. Vewitt, E. G. Davison, N. Garneau; J. Fagan;

Personnel: R. Beck, W. R. Fortney, F. DiCanio, R. tsuckley, I. Hawley, V. H. Murphy, J. Owens, P. Newitt, E. G. Davison, N. Garneau, J. Fagan, A. Harlan, R. Baird, N. W. Fraductis, Model 20 Copyflex Machine. The new Model 20 Copyflex is especially designed to provide a standard 46 printing width machine for producing a medium volume of copies. This new copyflex model incorporates features found in larger more expensive machines. The 46 printing width allows ample leavay for the customary 42 roll stock, or for multiple cut sheets inserted side-by-side. The Model 20 does away with cottly hours of manual recopying and redrawing, and saves the time wasted in waiting for "outside" copying.

Perducts: Bruning Copyflex Machines Models 93 (large volume), 50 (medium volume), 20 (small volume).

olume), 50 (medium volume), 20 (small volume) and 12 (office model)—in operation producing Copyand 12 inffice model)—in operation producing Copy-ther regies of any engineering tracings, specifications, bills of materials, charts, graphs, etc. onto a wide assortment of sensitized tinted and white Copyfler papers, film and cloth Office print making tech-niques will also be demonstrated. Hamilton Drafting Furniture: Equipoise Drafting Machines: Tracing Papers and Cloths; Electric Erasting Machines—7' eraser; Miscellaneous Drafting Room Equipment. onto a wide Hamilton Drafting Tracing

BRYANT CHUCKING GRINDER CO., No. 604

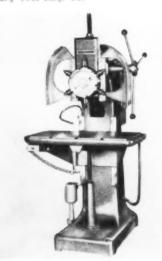
SPINGFIELD, VERMONT SPINGFIELD, VERMONT SUCK TOOL CO., No. 153 Kalamazzo 62, Mich. Personnel: R. E. Buck; J. R. Buck; D. J. Calkins;

H. S. Dutton.

New Products: 2-jaw Aviation Chuck for use on light lathes in chucking odd-shaped parts which offer

Burgmaster No. 2 Model A

Burg Tool Mfg. Co.



only irregular holding surfaces. Useful in machining irregularly-shaped aluminum alteraft parts.

Preducts: 2, 3, and 6-jaw Buck Ajust-Tru chucks.

BURG TOOL MANUFACTURING CO., Nos. 1113

BURG TOOL MANUFACTOR AND STATE OF THE STATE

Products: 2 Model A Burgmaster Drilling and Tapping machine (illustrated) with six spindles, for higher production, more efficiency and greater accuracy, at lower cost per piece machine. Tool-Fiex Neoprene-mounted positive drive floating tool holders. Burgmaster positive drive, extra rapacity tapping head.

CADILLAC STAMP CO., No. 853 Detroit, Mich,

CAMPBELL MACHINE DIVISION, No. 1126 American Chain & Cable Co., Inc., Bridgeport 2,

Products: Model No. 508 Abrasive Cut-Off Maew Products: Model No. 508 Abrasive Cut-Off Machine, a rotary-oscillating-hydraulic type wet abrasive cutting machine, which will cut round solid bars up to 8" diameter and tubing up to 8" o.d., either ferrous, non-ferrous or plastic materials including corrosion resistant as well as hardened or annealed steel. The unit will cut all materials by use of a suttable abrasive wheel. Temperature of work is controlled by proper distribution of coolant. Machine cuts all solids or tubing with a minimum of burr. burr.

Products: Campbell No. 2524 Nibbling Machine. The Nos. 223 and 508 Abrasive Cut-Off Machines.

THE CAPEWELL MANUFACTURING CO., No. 2027 Hartford, Conn

CARBOLOY DEPARTMENT, GENERAL ELECTRIC

CARBOLOY DEPARTMENT, GENERAL ELECTRIC CO., No. 539
Detroit, Mich.
Personnel: K. R. Beardsley; E. F. Wambold; J. E. Weldy; J. M. Bertotti; J. S. Gillespie; E. C. Howell: I. L. Wallace; F. J. Staroba S. Biggs; J. C. Bland; A. F. Schlumpt; E. C. Boyer; G. Contrucci; E. J. Monacelli; H. J. Rodemaker.
New Products: There will be some interesting machiners applications demonstrated.
Products: Carboloy Cemented Carbide Metal Cutting Tools, Woodworking Tools, Stone Cutting Tools, Press Dies, Wire Dies and Wear Resistant Applications. Series 600 Chrome Carbides, Herimet, Alnico Permanent Magnets and other metals.

THE CARBORUNDUM CO., No. 1326

No. 508 Abrasive Cut-Off Machine

Am. Chain & Cable Co., Inc. Campbell Machine Division





Sump Tank Cleaning Machine

W. R. Carnes Company

W. R. CARNES CO., No. 137

W. R. CARNES CO., No. 137
Madison, Wis.
Personnel: W. R. Carnes; F. A. Freese; Robert
Troller: and R. L. Whiting.
New Products: Model 120 Oil Dispensor and Mixer,
Model M Sump Tank Cleaning Machine (Illustrated)
Products: Samp Tank Cleaning Machine Models DLN.
11-8, Model 20-T. Series-A, 20-T. Series-8, Model-M.
Oil dispensors Model 110, 120, 121. Chip Trucks
Model 45 and 47.

CHICAGO DIAL INDICATOR CO., No. 511
180 N. Wacker Drive, Chicago 6, Ill.

Geneva Dial Indicator

Chicago Dial Indicator Co.



Personnel: Peter Flauter; Peter B. Fiauter; Arthur Boruta; Angus F. Turner; Stanley E. Ternstrom. New Products: Magnetic Base Test Sets; Bench Dial

New Products: Magnetic Base 1set Seas, Beath and Gage Products: Geneva precision measuring instruments, featuring the new Model 145, with jeweled bearings, comparable to a precision time-piece. This indicator is designed especially for checking variations in contour, dimension or roundness to .001". Other products include dial indicators, universal dial test set, lens measures and depth gages.

CHICAGO PNEUMATIC TOOL CO., No. 425
6 E. 44th St., New York 17, N. Y.
New Products: Air-operated "imidget" screwdrivers, showing faster driving methods for the setting of No. 4, No. 6 and No. 8 screws.
Products: Operating demonstrations of cold steel hydraulic riveting, screwdriving and nut running of fastners, and grinding. The hydraulic compression riveter demonstration will emphasize correct techniques for the bitch speed driving of cold steel rivet. riveter demonstration will emphasize correct tech-niques for the high speed driving of cold steel rivets and recommended applications. All Sizes of Super Cycle grinders (illustrated) will be demonstrated. This abrasive tool weighs only 3 lbs. per horsepower and features constant speed which assures safe wheel operation and a continued maximum rate of metal removal

removal.

CHICAGO TOOL AND ENGINEERING CO., No. 310
\$383 S. Chicago Ave., Chicago 17, 111.

New Products: Palmgren No. 83 Rotary Table with full 360° rotary movement and 4-inch cross-feed travel. This unit is designed with a circular table 8" in diameter, with a 5%" x 15% T-slot. The table is precisely graduated for the full 360° by single degrees in right-angle segments. A smooth-operating adjusting screw permits accurate setting to any position. The cross-feed movement is controlled by an accurately graduated screw that permits infinite adjustments within the travel range.

CHICAGO TRAMRAIL CORP., No. 218
4000 W. Washington Bivd, Chicago 24, III.
Personnel: C. C. Riemenschneider; S. W. Fountain;
F. W. Ballantine; and H. W. Thompson.
Products: Stak-Rak Crane: Storage Racks; Working
Model of Selective Storage System.

Pneumatic Super Cycle Grinder

Chicago Pneumatic Tool Co.





Palmgren Rotary Table

Chicago Tool & Engineering Co.

CHICAGO WHEEL & MANUFACTURING CO., No.

1101 W. Monroe St., Chicago 7, Ill.

CIRCULAR TOOL CO., INC., No. 634
707 Allens Ave. Providence 5. R. 1.
Personnel: G. H. Nye, R. F. Anderson, M. D. Pilon;
W. A. Jeffs; G. Ryone; and various representatives.
New Products: Carbide Tipped Staggered Tooth Sili-

ting Saws, High Speed Saws, High Speed Slitters, Solid Carbide Saws, Carbide Tipped Saws, Center Drills and Center Reamers.

CITIES SERVICE OIL CO., No. 346
Sixty Wall Tower, New York 5, N. Y.
Personnel: E. L. Stauffacher; C. A. Willis; B. J.
Farwig; H. F. Jones; A. N. Haengge; C. Seif,
J. M. Ross; R. J. Snider; G. E. Kohler; E. H. Elder,
M. Cofel; C. L. Warnecke; E. C. Lang; and J. E.
Naleskers \ idecker.

ER-3U Tapping Machine

Cleveland Tapping Machine Co.



Products: Cities Service Industrial Oils and Greases, Cities Service Industrial Heat Prover

CLECO DIVISION, REED ROLLER BIT CO., No. 413 Houston

THE CLEVELAND TAPPING MACHINE CO..

Fittings Machine
Fittings Machine
Products: EO-E1 and E34 Tapping Machines

COLLINS MICRO-FLAT CO., No. 608 2326 E. 8th St., Los Angeles, Calif. Personnel: Lee Collins.

Products: Granite Surface Plates and Stands.

GOLONIAL BROACH CO., No. 1201
Box 37, Harper Station, Detroit 13, Mich,
Personnel: Arvid Lundell; Ralph G. Lagerfeidt; Harry
H. Gotberg; Robt, N. Kendall; Chas. DeLorme;
Carl O. Malmstrom; and W. W. Wood,
New Products: Methods of broaching tank turret rings.

New Products: Methods of broaching fixing the frigs. Perducts: Broaching tools, broaching fixings, broaching the sharpening machines with focus on "Dymon-Lze" wheel dresser for smoother finish and accuracy in broach grinding; Steel stamps and marking devices. Drill jig bushings. Stamps and marking devices as manufactured by New Method Steel Stamps, Inc., an affiliate. Drill jig bushings as manufactured by Colonial Bushings, Inc., a wholly owned substidiary.

COLUMBIA ENTERPRISES, No. 341

Graya Lake, III.

Personnel: George Koesling; Werner Koesling; Max

Fischer; H. Geger; W. H. Brooke.

New Products: No. 2 Vertical Hand Milling Machine,
featuring a new quill with 2½° Vertical travel. An

entirely new No. 3 Vertical Milling Machine, with
more capacity, heavier, and with greater versatility.

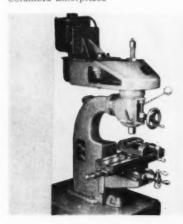
Products: The regular No. 1 Vertical Milling Machine. COLUMBIA EXPORT CO., INC., No. 1909

York.

COMMANDER MANUFACTURING CO., No. 1238
4227 W. Kinzie St., Chicago 24, Ili.
Personnel: J. B. Chamberlain: Frank O'Laughlin:
Wm. E. Wilson; John J. Tully: Warren Hartmann.
New Products: The Multi-Angle Drill Unit. a complete
self-contained drilling head and the Drilling Coolant
Table, a complete, portable coolant system contained in a precision ground work table.

Hand Milling Machine

Columbia Enterprises



See Us at Booth No. 310

PALMGREN

See Us at Booth No. 310

No. 60 FLANGED MILLING MACHINE VISE

The Popular Vise PRODUCTION MEN ARE RAVING ABOUT



Standardize your shop with this modern heavy duty milling machine vise and your production worries are over for good.

It's the ideal vise for Milling, Drilling, Grinding, Planing, Shaping, etc. Provided with bolt slots for clamping down to the table of the various machines. It is equipped with hardened and ground steel jaws, 6" wide, 2" deep, opens to full 6". You'll say it's the sweetest 'ob you ever saw and like many leading shops now using then, you, too, will profit by lower production cost and more efficient work.

Order today from your dealer or Write for Circular No. 303

CHICAGO TOOL & ENGINEERING CO.

Mfrs. of PALMGREN PRODUCTS for over 34 years

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CHICAGO 17, ILL.



Cut grinding costs . . . with rugged QUEEN CITY Grinders

Queen City Grinders are built to stand up under the heavy work that pours through the shop daily. Noted for their durability, freedom from downtime and low cost, Queen City Grinders cut grinding costs to the bone. • Order today a battery of these low cost grinders and eliminate "ganging up" ground one lone grinder.



QUEEN CITY Machine Tool Co. 235 E. 2nd St. Cincinnati 2, Ohio





The Commander Tapper

Commander Manufacturing Co.

Products: Five Commander products in actual operation, including the Tapper (Illustrated), Drill Chip Breaker, Multi-Angle Drill Unit, as well as two mentioned above. Cut-away models of some of the tools will be shown in order to show construction and operating features.

CONNORS & DAVIS SALES CORP., No. 215

West Springfield, Mass.

Personnel: James Connors; Russell Davis; A. W.

Blendow; and Sam Ashelford.

New Products: Perkins Precision Spring Coller (Hand
and Power Models). Perkins Bendit Metal Forming

Machine; Spring Looping Tool; Industrial Baking Products: Perkins Gears, Plus above items

CONOVER-NAST PUBLICATIONS INC., No. 152 New York, N. Y.

CONTINENTAL TOOLING SERVICE, INC., No. 842

Separax Champion Cut-Off Machine

The Cosa Corporation



COSA CORP., No. 1750

105 Lexington Ave., New York 17, N. Y.
Personnel: Paul M. Aubry. Ernest Gygax, Robert
Hoftman: Emil Widner: Werner Buner, Jr.; Anton
Joen; Jack Reith; William F. Wolf; J. Kuenzli;
Eric Biedermann; and J. S. Broatch.

New Products: Blast "Separex" Champion Cut-Off
Machine (Illustrated) with 2-speed (1500-3000 r.p.m.,
h hp., drive motor. This unit can be equipped with
a fine-tooth saw blade to cut brass or aluminum
tubing or section wheel. The machine lends itself
to special operations; special fixtures can be mounted
easily, since the top of the machine is flat and is
provided with T-slots. Also to be shown are Bechler
Isomatic Swiss Automatic Screw Machine: Bodey
Micro-Finish Lathe; Boley Multi-Spindle Drilling
and Tapping Machine; Fortuna Internal & Face
Grinder; Pittler Turret Lathe; Sallaz Semi-Automatic
Burnishing Machine; Sigman Fully-Automatic MultiDimensional Inspection, Sorting and Tabulating Machine; Wanderer Column Milling Machine; and KolGear Grinder Machines.

Dimensional Inspection. Sorting and Tabulating Machine: and Kolb Gear Grinder Machines Milling Machine: and Kolb Gear Grinder Machines. Swiss Automatic Screw Machines. Predicts: Drill Presses. Swiss Automatic Screw Machines. Cam Shapers. Precision Pinion Cutting Machines. Precision Lathes, Lead Screw Lathes. Super Precision Lathes. Turret Lathes, Multiple Spindle Prilling & Tapping Machines. 2 and 3 Dimensional Engraving Machines. Engraving & Copy Milling Machines. Engraving & Copy Milling Machines. Universal Milling Machines. Universal Milling Machines. Virtuel Boring & Turning Lathes. Toolmaker's Microscopes. Vicketa Type Hardness Tester, Radial Drills. Large Precision Upright Drills, Gear Grinders. Coll Winding Machines. Turret Lathes. Burnishing Machines, Balancing Machines, Multi-Dimensional Inspection Machines. Cold Saws. Saw Sharpening Machines. Machines, Cold Saws, Saw Sharpening Machine, Lapping Machines, and Milling Machines.

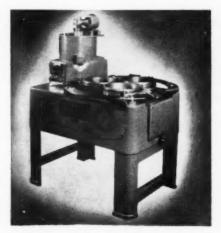
Lapping Machines, and Milling Machines.

ARTHUR A. CRAFTS CO., INC., No. 741
603 Newbury St., Boston 15, Mass.
Personnel: Robert W. Sawin; Seth D. Barraclough;
Standish Rowe; Blaine Webber; Fred W. Cox, Jr.;
Edward Hirchert; Richard Hirchert; A. C. Jewell;
O. E. Stevens; Roger H. Huston; Erwin Kallio.
New Products: New line of Carbide End Mills, Circular Form Tools and Step Drills, The carbide tipped
Circular Form Tools are stated to reduce the downtime of screw machines to a fraction of that made

Circular Form Tool

Arthur A. Crafts Co., Inc.





Lapmaster Lapping Machine

Crane Packing Company

by the use of tools requiring frequent grinding. More pieces per hour are possible because of the increased speeds at which carbide tipped tools are capable of operating. Each tool has from two to four carbide cutting tips polished to a micro-finish for maximum

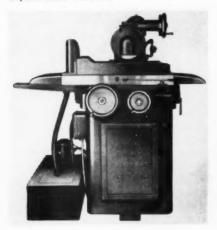
life and accuracy.

Products: Carbide and Diamond Tipped Tools, Cutting
Tools Gages and Wear Parts.

CRANE PACKING CO., No. 1908
1800 Cuyler Ave., Chicago 13, III.
Personnel: F. E. Payne; K. V. Rohlen; C. E. Schmitz;
H. L. App; H. I. Sole; S. Hauxhurst; V. E. Vorhees;
Preducts: Lapmaster Automatic Precision Machines,
capable of generating surfaces of precision flatness

General Purpose Surface Grinder

Crystal Lake Grinders



and finish in short runs or in production quantities; these machines will lap parts to the tolerance of one light band (.0000116°), and in addition obtain a fine finish to as low as one micro-inch RMS. In one cycle, the Lapmaster can precision-lap either identical parts or parts of dissimilar shapes and materials, Also, Mechanical Shaft Seals; Mechanical Packings; Teflon Products; Thread and Gasket Sealing Compounds. ing Compounds.

CRUCIBLE STEEL CO. OF AMERICAN, No. 1401 New York, N.

New York, N. Y.

CRYSTAL LAKE GRINDERS No. 1138

19 Gates St., Crystal Lake, Ill.

Personnel: Robert H. Kirwin; Blanch W. Kirwin;

Owen Stokes; Paul Burger; Dave Sunderlage; Patrick

J. Babcock; Clifton Millar.

Products: The 8" x 11" Universal Grinder; The

10" x 18" Universal Grinder; the No. 750 Plain

Grinder and the 6" x 12 x 15" Height over Chuck,

Surface Grinder (Illustrated) designed for grinding

hard materials such as carboloy and hard alloy

steels where a fine finish, flatness and perfect core

grinding are essential, Machines are rigidly con
structed so that Carboloy inserts on dies weighing

up to 360 lbs. can be readily ground without danger

of overloading the machine.

DAKE ENGINE CO., No. 1019 Grand Haven, Mich.

DANLY MACHINE SPECIALTIES, INC., No. 1610 2100 S. Laramie Ave., Chicago 50, Ill. Products: Complete line of die sets, including standard and special units to accommodate any die, together with a wide variety of die makers' supplies. Highlight of exhibit is a stereo-silde presentation of Danly's system for assuring maximum delivery speed. Performance and precision advantages of die sets will be on display, including Danly shank welding process.

DAVIS BORING TOOL DIVISION, GIDDINGS & LEWIS MACHINE TOOL CO., No. 1705 Fond du Lac, Wis.

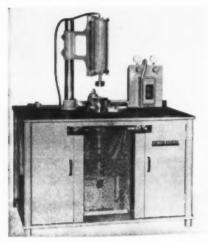
DAYTON ROGERS MANUFACTURING CO., No.

1843
Minneapolis, 7. Minn.
Personnel: M. J. Mikulak; Robert D. DeLong; A. M. Bakken; H. D. Carroll; M. C. Barnum; T. A. Bell; J. R. Dolan; and H. L. Lacock.
New Products: The Dayton-Rogers Drawn Shell Trimmer, (illustrated), which was primarily developed to trim square, rectangular or irregular shaped drawn shells with small corner radii. One of these completely new type of machines will be in actual operation at the booth.
Products: Display of metal stampings in small lots, display of molded plastics in small lots and Pneumatle Die Cushions.

Standard Precision Die Set

Danly Machine Specialties, Inc.





Drawn Shell Trimmer Dayton Rogers Mfg. Co.

DAZOR MANUFACTURING CORP., No. 845 4481-81 Deman Ave., St. Louis, Mo. Personnel: J. A. Mehr; A. Lorde; E. S. Swanson;

Burkhardt A. Burkhard New Products; New Products: Air-Cooled Incandescent Lamp.
Products: Dazor Floating Lamps (Fluorescent and
Incandescent); Dazor Floating Magnifiers with
Fluorescent lighting.

DE CASTRO & ASSOCIATES, No. 1904
1515-17 Santa Fe Ave., Los Angeles 21, Calif.
New Products: The "Hestika" high speed precision
turret lathe, of German manufacture; featuring high
speed spindles in the turret head, threading attachment, compound cross slide, 18 spindle speeds from
34 to 2400, pressure lubricated bearings, etc.
Products: Speedex Dial Index Feed, both mechanical
and air operated. The Speedex Dial Feed Punch

Magnetic Grip Machine Shield

Dilley Manufacturing Co.





Automatic Cut-Off Machine Dewalt, Incorporated

Presses; Portable coolant systems in various sizes and pumping capacities; Speedex Indexing Collet Chuck for use on dial press or milling machine; a new beltiess 12-speed 21" heavy duty drill press.

DELPARK CORP., No. 1230 DELPARK CONF., No. 1230
Lebanon, Ind.
Personnel: John M. Derby; S. L. Powers; H. H.
Harms; F. T. Jones; P. R. Honan; G. L. Guymon;
R. A. Broerman; Wm. F. Johnston; D. H. Learner;
S. G. Russell; E. E. Huff; B. C. Crane; J. F.
Coleman, John Stlence.
New Products: Delpark Endless Belt Filter
Products: Delpark Full-Flow Self-Cleaning Industrial

Filters

DELTA POWER TOOL DIVISION, ROCKWELL
MFG, CO., No. 209
695 E. Vienna Ave., Milwaukee 1. Wis.
DETREX CORP., No. 2035
Box 501, Detroit 32, Mich.
Personnel: A. Harris; R. Ciristenson; J. Courier;
J. Sliney; R. Gordon; G. W. Walter; G. Conn.
New Products: "Extrudite" Phosphate Coaring Process
which makes possible the cold extrusion of steel.

DETROIT POWER SCREWDRIVER CO., No. 140 2809 W. Fort St., Detroit 16, Mich. DETROIT STAMPING CO., No. 115
347 Midland Ave., Detroit 3, Mich.

DEWALT, INC., SUBSIDIARY OF AMF No. 2005

Lanca ter, Pa
Personnel: Paul Gardner; W. Ross Stevens; Charles
Snyder; and H. H. Smith.
Products: The DeWalt Model GEV-MC Rotating Arm

Saw equipped with screw feed and metal top for metal cutting; and the DeWalt ME-1, illustrated, an automatic machine for cutting solid ferrous bar stock and heavy-wall tubing, light sections of non-ferrous metals and thin-wall tubing.

EUGENE DIETZGEN CO., No. 332

DILLEY MANUFACTURING CO., No. 243
1656 Andel Road, Cleveland 6, Ohio
Products: The Dilley Magnetic Grip-Shield, a safety
device consisting of a magnetic plastic guard which
grips innistantly on the iron surface of any machine
tool by magnetic attraction. The transparent plastic
affords a clear view of all work processes while at
the same time, protecting the machine operator from
flying metal chins. flying metal chips.



FROM YOUR OLD TOOLS AT A FRACTION OF NEW TOOL COST

GUARANTEED NEW TOOL PERFORMANCE

Let us quote on the manufacture of special tools, both high speed and carbide. We can also produce specials to your blueprint specifications from our large stock of standard tools. Rush your blueprints to us for Immediate quotation!

TAKE ADVANTAGE OF OUR EFFICIENT TOOL SHARPENING SERVICE! ALSO REPAIRING OF CARBIDE TOOLS.

ANUFACTURERS CUTTER CORP.
273 JEFFERSON ST. • NEWARK 5, NEW JERSEY





Promatic Centerless Grinder

Diversified Metal Products Co.

DIVERSIFIED METAL PRODUCTS CO., No. 1239 5125 Alcoa Ave., Los Angeles 58, Calif. 5125 Alcoa Ave., Los Angeles 58, Calif. Personnel: J. K. Sutherland; K. A. Dunlop; D. N.

Macconel New Products: The Diversimatie "Promatic" No. 1. Centerless Grinder, a machine manufactured with exceptional rigidity throughout, assuring close tolerances finish and long life. Provided with a massive spindle, a 1½" capacity, the base is recessed for operator comfort. Regulating wheel has infinitely variable speed of from 35 to 350 r.p.m. The machine is equipped with a constant pressure dressing device for grinding wheel forming.

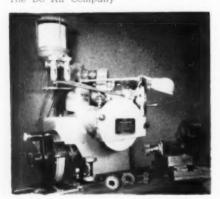
Products: Diversimatic No. 1, centerless grinder and related accessories. Products: The Diversimatic "Promatic"

THE DO-ALL CO., No. 1634

Des Plaines, Ill. New Products: The DoAll Surface Grinder with a gear

"Cool Grinding" Unit

The Do All Company



generating attachment; this unit produces all types of gears up to 6" in diameter with any pressure angle desired and with any number of teeth up to 190. Only one set-up is required. Also to be de-monstrated is the DoAll "Cool Grinding" Method (Illustrated) which prevents checks, burns and cracks; ittustrated which prevents checks, burns and cracks; its coolant action will be seen through a new plastic wheel guard designed to show the actual flow of coolant through the grinding wheel to the point of contact on the work.

contact on the work,

Products: A complete line of gage blocks and accessories; DoAll Mobile Inspection Unit; The Universal Gage Block Holder and plastic gage block case.

Complete line of cutting tools and industrial supplies; complete selection of Band Tools for sawing, filing, grinding and polishing any material, displayed so that visitors will see each type of band tool magnified ten times.

DOERR ELECTRIC CORP., ELECTRO MACHINES. INC., No. 208 Cedarburg, Wis.

Cedarburg, Wis.

Personnel: Lee A Deerr; J. H. Park; H. E. Ellis; Emmet Doerr; Edwin Doerr; Elmer Baumann; and Roger Polzin

New Products: No. 42 frame motors with type C machined face mounting. Foot mounted and flange mounted right angle drive, fractional horsepower mounted.

Products: Motors with both standard and special fea-tures in fractional and integral horsepower sizes. Right angle gear motors will also be shown.

Right angle gear motors will also be shown.

DOUGHTY LABORATORIES, INC.. No. 216

500 Fifth Ave.. New York 18, N. Y.

Personnel: E. P. O'Donnell and E. M. Ellsworth.

New Products: Hard'N'Tuff, the new-type steelhardening compound. Its merit rests in the knowledge that it is the only product of its kind to
combine carburizing, chromizing and alloying processes; the net result is a tough, armorible coating
on all tools and parts treated. It is highly recommended for all cutting tools and parts subject to
wear, corrosion or abrasion.

DOW MECHANICAL CORP., No. 711

Thompsonville, Conn.

Personnel: Walter K. Dow

Products: Dow-Gages and Tacomps tooled for specific checking jobs, along with enlarged photographs of these basic checking units tooled for checking almost these basic enecking units tooled for checking almost every conceivable dimension. Hlustrated is a stand-ard Model 10 Dow-Gage equipped with a Federal AGD center backed indicator and a special stage set and master for checking a simple taper depth in a production part. Also to be shown: Du-Bits, a modern high speed steel tool bit.

Standard Gage with AGD Center

Dow Mechanical Corp.



MACHINE and TOOL BLUE BOOK

HIGH SPEED PRODUCTION
CONTINUOUS OIL GROOVING

WICACO CONTINUOUS OIL GROOVER cuts grooves of all descriptions, internal or external, continuous or intermittent.

Send us samples for grooving. We will return them eut to specifications, with a record of time and cost estimate. No obligation.

Ask For Descriptive Booklet And See How You Can Improve Your Production.

AACACO

SINCE 1868

MACHINE CORPORATION

WAYNE JUNCTION, PHILA. 44, PA.

Manufacturers of

Precision Machinery and Machine Parts
Roller Bearing Twister Spindles—Spindle Oiling Machine

Precision Internal Grinder—Screw Machine Products



People work better when they SEE BETTER

In the General Electric Plant Magni-Focuser helps a worker make adjustments on precision equipment.

matched prismatic lenses give needle-sharp magnification. Comfortably light weight. Fits over regular glasses. Leaves both hands free. Normal vision may be resumed by lifting head.

MAGNI-FOCUSER

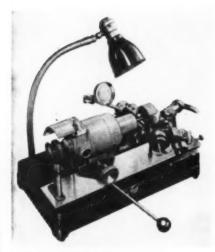
Leaves both hands free to work Magni-Focuser—the binocular magnifier—reduces eye-strain and prevents squinting—thereby speeding production, increasing accuracy and minimizing the chance of errors and accidents.

Gauge reading, layout work, inspection, tool and die work are just a few of the jobs that need the Magni-Focuser. Speeds precision assemblies, blue print work. Restores the usefulness of the skilled hands of many older workers whose vision needs a seeing aid.

Now aiding thousands of workers, the Magni-Focuser can help your plant produce better. Immediate delivery. 10-day trial without obligation. Return to us if not satisfied. \$10.50.

Send for descriptive folder

EDROY PRODUCTS CO. 480 Lexington Ave., Dept.14, New York 17, N. Y.



Precision Drill Grinder

The Dumore Company

THE DUMORE CO., No. 404
1300 17th St., Racine, Wis.
Personnel: George J. Zavis; James Steibel; Earl Owen;
L. B. Augustine; H. L. Wordrip,
New Products: Dumore Precision Drill Grinder, Capacity No. 70 to ½" Drills. These units give a complete selection of drill point angles from 90° to 150° and clearance angle from 5° to 15°. The correct point and clearance angle to get maximum penetration in the material being drilled can now be specified with the use of this precision tool.
Products: Automatic Drill Head, Precision Drill

Electrically Operated Counters

Durant Mfg. Co.



Grinder, Tool Post Grinders, Flexible Shaft Tools, Handgrinders

Handgrinders.

DURANT MANUFACTURING CO., No. 837
1929 N. Buffum St. Milwaukee 1, Wis.
Personnel: R. B. Winkler; E. W. Crane; L. A.
Nourte, E. C. Carlson; O. E. Paramore; G. H.
Schroeder; Ken G. Dimond; and C. E. Hess.
New Products: New series "Y" and "CS" electrically
operated Productimeters, the "speedometers of industry." These units are built to give accurate
count at high, low, and intermediate speeds. A
simple solenoid and linking mechanism assure minimum wear and maximum life. Units are entirely
closed as protection against dust and moisture.
Speeds of 1000 counts per minute and 800 per
minute are possible on Model "Y" and "CS" respectively.

minute are possible on pertively pertively pertively Product: Stroke and Revolution Counters; Small "Y" Stroke and Rotary Counters; Double deek Stroke and Revolution Counters; Predetermined Productimeters; Electric and Photo-electric Counters; Printing Counters; Electronic and Instrument Counters.

New Haven, Conn. Personnel: Joseph A Benson and District Representa-

tives.

New Products: Aligning self opening die head (illustrated), for Brown & Sharpe automatic serew machines and any other machines where die head does not rotate, such as turret, lathes, hand serew machines with the serew machines with the series machines.

chines, etc.

Products: Full line of self opening die heads including
the receding type of die head for the cutting of
superior quality pipe threads. Serew threads as
cut with H & G die heads. Self centering and self
aligning tool holder for drills, reamers, etc.

aligning tool holder for drills, reamers, etc.

EASTERN TOOL CO., No. 102

East Hartford, Conn.

Products: Carbide tipped, adjustable head tools, carbide indicator dial points, and carbide boring tools. The adjustable head tool may be aligned with the center of work in a few seconds by making an adjustment on the head of the tool itself. Greater utilization of the carbide cutting edge is reported to result from this feature. A complete line of carbide-tipped boring tools—standard and special shaped—will complete the firm's exhibit.

EASTMAN KODAK CO., No. 518 Rochester, N. Y.

ECLIPSE COUNTERBORE CO., No. 526 1600 Bonner Ave., Detroit 20, Mich.

ELASTIC STOP NUT CORPORATION OF AMERICA Nos. 217 and 219

Nos. 21c and 219
2330 Vauxhall Road, Union, N. J.
Personnel; E. F. Nason; D. E. Lally; C. E. Heywood;
B. F. Linck; D. B. Sorenson; R. J. Cooney; K. D.
Davis; H. B. Schultz; W. H. Riley and R. R. Thurston.

Self-Opening Die Head

Eastern Machine Screw Corp.



VIKING

MILLING CUTTERS

For Slotting and Keyway Milling

FEATURES:

Serrated Blades Adjustable in two directions.

Provides strain free blading, positive locking and greater economy in use of cutting material through "Step-Down" system. Blades supplied in high speed steel or carbide.

Write for complete details.

Also Makers of Single Point Carbide Tool Holders with 14 outstanding advantages.



BOOTH NO. 650, A.S.T.E. SHOW

TOOL COMPANY

SHELTON CONN.

Obtain Microscopically SMOOTH FINISH and PRECISION FITS on BEARINGS, GEARS, PISTONS, VALVES and SLIDES Without Special Tools or Highly Skilled Labor . . . IN LESS TIME! AT LOWER COST! . . . with TIMESAVER Lapping Compound.



Does not immetal. Produces proper oil clearance.

TIMESAVER Lapping Compound action is bed or charge rapid at first. It quickly but gently removes surface irregularities and surplus metal, gradually breaking down from an abrasive to a polishing compound. Finally it becomes an inert material.

> Write for FREE SAMPLES and booklet "Precision Finish"-no obligation

continuously served rias continuous; serven leading manufacturers the Army, VER 30 YEARS. for OVER 30 YEARS.

MESAV PRODUCTS COMPANY

629 W. Washington Blvd. Chicago 6, Illinois

Products: Basic products Self-locking fasteners, Roll-pins and Elastic Stop Nutz

ELECTRO-ARC MANUFACTURING CO.. No. 100

5030 Commonwealth Ave., Detroit 8. Mich. ELECTRO-MECHANO CO., No. 419 263 F. Eric St., Milwaukee 2. Wis.

ELECTRO-MECHANO CO., No. 419
263 E Erie St., Milwaukee 2, Wis.
Personnel: A. H. Olofson; W. E. Lueders
New Products: 16" Wide Range Variable Speed Preeision Drilling Machine Line. 8" Automatic Air
Pred Drilling Machines, Pad mounted.
Products: 8" and 16" Variable Speed, Hand & Air
Pred Drilling Machines, Bench, Floor and Head
Models, Portable electric tachometers.

ELGIN NATIONAL WATCH CO., ABRASIVE DI-VISION. No. 740 Elgin. III.

Elgin. III.

ELOX CORP., Nos. 318 and 320
Clawson. Mich
Personnel: Don Nimpson; Joe Nast; Robert Donohoe;
John Rathbun; Robert Owens.

New Products: Model M 700 Electron Drill designed
for the removal of broken taps and drills, plus
being capable of drilling either round or shaped
boles in the hardest metals. These units work on
the principle of creating a series of intermittent
ares which disintegrate or vaporize the metal.
Complete removal of 8/32" taps is guaranteed in
less than four minutes; 3/16" drills require only
six minutes for removal.

Products: Complete line of Electron Drills for tap
and drill extracting in operation.

ENCO MANUFACTURING CO., No. 610

ENCO MANUFACTURING CO., No. 6 4520 W. Fullerton Ave., Chicago, Ill.

ENGINEERING MANUFACTURING CO., No. 125

615 N. Commetce St., Sheboygan, Wis. Personnel: E. H. May; I. R. Bosshardt; W. A. Wendland

Wendland

New Products: Blue Print Cabinets

Products: A complete line of drafting room furniture
and equipment including Drafting Tables, Drafting

Steols and Benches, Drawing Kits and Carrying
Cases, Blue Print Paper Dispensers, Drawing
Boards, Straightedges, T-Squares, Scales Rules,

Triangles, Dividers, Parallel Rulers, Protractors,

Erasing Shields and Pencil Pointers.

16" Precision Drilling Machine

The Electro-Mechano Company



ENGINEERS SPECIALTIES DIVISION, No. 633 980 Ellicott St., Buffalo 9, N.

Personnel: W. DeBoer; E. C. Polidor; E. C. Fayfield; John Bernardini; Joe Conte; Ernest Bott; Par Henry; John C. Ott; Marvin W. Davis; R. J.Wirges; Larry Hammond; T. C. Froeberg; W. W. Pound; Bert Fletcher; Paul B. Slater; Gay Wood; Iver J. Es-benson; R. L. Guimont; and Nick Maturevitz.

benson; R. L. Guimont; and Nick Maturevitz.
Products: The theme of the ESD exhibit is "Gaging
by Optical Projection." Products will include ChartGage Screens for use on all makes of optical comparators and contour projectors; staging fixtures;
jet blade and die contour checks; optical comparators and contour projectors; 30" screen blade projection comparator; magnification checker and scale;
"V" block staging fixture; ESD work stages and
fixture bases. fixture bases.

ENGIS EQUIPMENT CO., No. 525 431 S. Dearborn St., Chicago 5, Ill.

Personnel: J. P. Steindler; E. J.Schneider; J. M. Throckmorten; Arnold Young; and John S. Morton.

New Products: Microptic Precision Clinometer; Align-ment Telescope combined with Auto Reflection and Auto Collimating Units.

Products: Hyprez Diamond Compounds Optical Tooling, Instruments and Accessories, Optical Precision In-struments, Mechanical Precision Instruments, and struments, Mechanical Precision In Multiple Javelin Etching Machine.

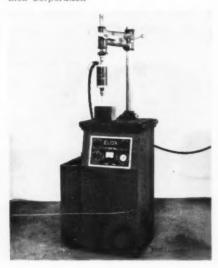
ERICKSON TOOLS-DIVISION No. 1127 2309 Hamilton Ave., Cleveland 14, Ohio

Personnel: M. L. Benjamin; S. S. Benjamin; J. D. McMahon; Frank Winnen; L. M. Lacey; A. G. Jenkins; R. G. Butts; Geo. Frei; R. F. Jacobs; Geo. F. Bennett; G. B. Collins; Nelson Dailey; H. S. Brandt; C. K. Higley.

New Products: Special applications of Erickson tools. Products: Erickson Precision Collet Chucks, Expanding Mandrels, Adjustable and Full Floating Holders, Tap Chucks, and related Holding tools; Erickson Speed Indexers (in actual production work); Erickson Air cylinders (operating display); Air chucks; Erickson-State Boring Bars.

Elox Electron Drill

Elox Corporation



ERRINGTON MECHANICAL LABORATORY. INC..

24 Norwood Ave., Staten Island 4, N. Y.

ETTCO TOOL CO., No. 1243 596 Johnson Ave., Brooklyn 6, N. Y.

EUCLID TOOL ENGINEERING CO., No. 545

14689 Euclid Ave., Cleveland 12, Ohio Products: Blown-up photographs of special machines designed by the firm. Intricate tooling problems and a mural depleting various phases and history of the tool design field. This firm designs dies, its. fixtures, special tooling, special machinery, product deselopment and technical art.

EVEREDE TOOL CO., No. 1012 2002 N. Parkside Ave., Chicago 39, Ill. Personnel: A. J. Proksa; Andrew Graham; Frank B.

Ross
Products: EveredE Boring Bars, utilizing triangular
h.s.s. and solid carbide tool hits pre-ground on all
three sides, ready to use. Boring bar holders and
boring bars for turret lathes (illustrated); the latter
can be clamped quickly into the exact required position. The eccentric barrel maintains its precision
setting and e-eeps the boring bar at horizontal position regardless of the size of the lathe used, within
specified limits. Also EveredE boring heads and
carbide tool holders with on-the-joh adjustable chip
breakers. breakers.

EX-CELL-O CORP., No. 1708

1200 Oakman Boulevard, Detroit 32, Mich,
Personnel: H. G. Bixby; J. K. Fulks; D. H. McIver;
R. W. Ford; H. A. Knack; J. L. Mustard; S.
Pearson; A. Coons; A. Plein; E. Lunde; E. Lunde;
and A. E. Schulz.
New Products: Jet Engine Compressor Blades; Jet
Engine Nozzles; new design Carbide Tool Cutters;
and Pintree Broaches.
Products: Alteraft Paris and sub-assemblies. Broaches.

Products: Aircraft Parts and sub-assemblies, Broaches, Bushings (Drill Jig), Carbide Tipped Tools, Core Drills, Counterbores (Hand Detachable). Face Mills (Inserted Blade), Form Tools, Grinding Spindles, Jet Engine Biades, Nozzles, Rotors, Milling ters, Multiple-Thread Milling Cutters, Prod Parta (Precision), Spot Facers (Inverted). Production

FEDERAL MACHINERY SALES CO., No. 1108
4659 Washington Blvd., Chicago 44, Ill.
Personnel: Spencer B. Booz; Harry A. Paine; Roger
L. Fredrickson; E. N. Hartmann; Theodore T. Maxwell; Gunnar Nielsen; P. C. Paulson; Robert Paulson; W. W. Richardson; W. A. Dundas; and James
G. North son; W.

G. North.

Products: Self-Opening Die Heads, Collapsing Taps,
Chasers, etc., manufactured by Geometric Tool Company Division, Greenfield Tap & Die Corporation;
Drills, reamers, gages, etc., manufactured by Greenfield Tap & Die Corp.; Automatic punch press feeds

Toolroom Counterbore Set

Ex-Cell-O Corporation



and stock reels manufactured by H. E. Dickerman Mfg. Co. Abrasive discs and wheels manufactured by Gardner Machine Co. Various flexible tubing products manufactured by Flexible Tubing Corp.

FEDERAL PRODUCTS CORP., No. 733

1144 Eddy St., Providence 1, R. I.
Persannel: H. G. Populorum; R. S. Scott; R. E.
Thacher; D. L. Halvorsen; I. A. Hunt; Stanley
DeGroff; A. C. Sanford; T. L. Johnson, Jr.; D. E.
Andrews; Morgan Sartwell; Robert Thomas, Jr.; F.
C. Tanner; H. F. Joslin.
New Products: Federal Dimensionair Air Gage (Illustrated) on a hole lamping operation, Air Sann Gages

Frouncts: Federal Dimensionalr Alf Gage (Illustrated) on a hole lapping operation. Air Snap Gages, Multiple I.D. and O.D. Dimensionair Gages and other Dimensionairs. Automatic Sorting Gage demonstrating sorting 400 pcs. per minute. Also, Automatic Mica Sorting Gage sorting pieces into 10 size categories. Pressureless Measuring Gages. Automatic Eccentricity Gage demonstration.

matic Eccentricity Gage demonstration.

Products: The above, plus Electronic Gages. "Electricator" Gages, Dial Indicators and Accessories,
Dial Indicator Gages and Special Indicating Gages.

FIELD ABRASIVE SPECIALTY MFG. CO., No. 312 Dayton, Ohio

FIRTH STERLING STEEL & CARBIDE CORP. No. 725 3113 Forbes

No. 725

3113 Forbes St., Pittsburgh 30, Pa.

Personnel: T. W. Gabriel; D. G. Clark; C. R. Harmon;
J. S. Roller, D. F. Dickey; M. F. Judkins; M. L.

Backstrom; K. D. Mann; W. J. Loach; E. J. Reitler;
E. A. Carpenter; T. A. McLean.

New Products: New Method—for machining sintered carbide and other superalloys.

Products: High Speed Steels, Tool & Die Steels,

Stainless Steels, Globe Wire Products, Firthite

Brazed and Mechanical Tools, Firthaloy, Diecarb,
and the Method-X.

FONDA GAGE CO., No. 715
57 Daly St., Stanford, Conn.
Persennel: D. C. Fonda; R. L. Arndall; R. A. Manes;
H. B. Berkshire; and A. D. Miller.
Products: Life-time carbide blocks and steel gage
blocks. Both feature the "ultra-finish" which permits Fonda blocks to be wrung together without
oil or other films which might impair the wringing
qualities of the blocks and the accuracy of measurements. ments.

FOOTE BROS. GEAR & MACHINE CO., No. 1109 Downers Grove, Ill.

Dimensionair Air Gage

Federal Products Corporation





Tool Cutting Heads The Gairing Tool Company

GAIRING TOOL CO., THE, No. 738
P. D. Box 478, Detroit 32, Mich.
Products: Gairing standard cutting tools; examples of
Special Cutter Heads which combine several cutter
operations in one tool, thereby assuring perfect concentricity between diameters and reducing machine
set-up time. The Cutter Heads combine simplicity
with ease of adjustment; provide solid, independent
support to the black. support to the blades

THE GAMMONS-HOAGLUND CO., No. 1231

Manchester, Conn.

Personnel: Clinton W. Keeney; M. Gammons Fitch;
Marion Avery Fitch; C. Arthur Hoaglund; and Fred Hanson.

Products: Gammons Helical Reamers, Gammons Heli-

End Milis.

THE GARLOCK PACKING CO., No. 105
Palmyra, New York
Personnel: Ford Wilders; Philip Lind; J. L. Allen;
F. W. Blake; W. J. Bowler; R. W. Chambers;
J. M. Daugherty; E. C. Johnson; B. A. Kirchboff;

Stud and Nut Driving Machine

Garvin Brothers, Inc.



R. W. Libbert; E. A. McClay; N. C. Schlegel; S. C. O'Byrne; D. E. Skogstrom; R. M. Sousa; and C. C. Wiffin. Products: A line of mechanical packings, rotary scals, hydraulic packing, gaskets for application to machine tools and other metal working equipment.

GARVIN BROS., INC., No. 429
P.O. Box 536, South Bend 24, Ind.
Personnel: R. D. Chappell; and T. A. Garvin.
New Products: "Power-Torque" Stud and Nut Driving

Machines (illustrated). Torque Indicating and regulating equipment.

Products: Sub-contract Aircraft parts, and above new

products. GENEVA MACHINE & TOOL CORP., No. 736 Tampa, Florida

GEROTOR MAY CORP., No. 1801 1501 Maryland Ave., Baltimore, Md.

GIDDINGS & LEWIS MACHINE TOOL CO.,

No. 1705

No. 1705
Davis Boring Tool Division, Fond du Lac, Wis.
Personnel: D. M. Laflin; E. J. Kaiser; M. J. Kuhn;
H. L. Johnson; V. E. Unger; and R. T. Beirne.
New Products: Eight-position tool holder, designed
for use on vertical boring and turning mills; this
device requires only one wrench adjustment to change
position; enables an operator to turn, undercut, bore position; enables an operator to turn, undercut, bore and chamfer in one set-up. Four tools can be mounted at once, with positive position assured by two index pins. Features decreased set-up time with resultant increased production. Also: Clamped-On carbide-tipped planer tools and 10° to 50° expansion type boring heads.

Preducts: Quick-change spindle, heavy duty special two-in-one car wheel boring tool, super micrometer stub boring tool sets, line boring bar, expanding block-type boring tools, special recessing block-type tools.

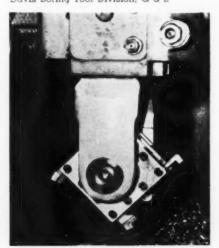
type tools

GILMER CO., L. H. DIV. OF U.S. RUBBER CO., No. 236 Philadelphia, Pa.

GLOBE HEAT SEAL, INC., No. 1809
3830 S. Robertson Bird., Los Angeles 34, Calif.
Personnel: H. L. Reitzes; A. T. Alden.
New Products: Model C Hand Screw Machine and
Globe Self-Indexing Bed Turret (illustrated) which
reatures a self-indexing mechanism linked to auto-

Eight-Position Tool Holder

Davis Boring Tool Division, G & L



Dependable MEASURING & CHECKING EQUIPMEN

and Now

HAND WHEELS, KNOBS, HANDLES

Cadmium Plated READY DELIVER

Non-rusting - good looking



SOUD POTARY MACHINE HANDLES

STRAIGHT and OFFSET TYPE



MALLEABLE IRON

We also build jigs, fixtures, special tools and machinery. Send us your blueprints.



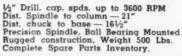
3 x 4 x 12 and up.



CORPORATION MACHINE PRODUCTS DETROIT 12 MICHIGAN 6771 E. McNICHOLS ROAD

SENSITIVE UNIVERSAL BENCH RADIAL

DRILL



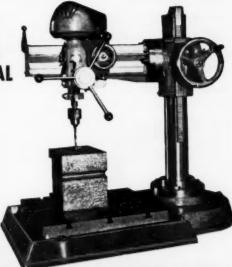
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Dealers inquiries invited.

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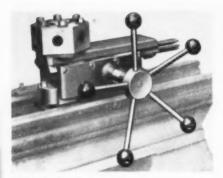


MACHINERY

197-199 MOTT ST.

Phone Worth 4-7615

NEW YORK 12 N. Y



Self-Indexing Bed Turret

Globe Heat-Seal, Inc.

matic stop rods; the unit can be used on most standard lathes with from 9° to 12° swing. Turret is guided in its rotation by a pilot integrally cast, which engages a mating bearing in the slide. Entire work load is applied to the pilot and flat bearing surfaces, resulting in rigidity and freedom from deflectives.

Products: Above items, as well as Heavy-Duty Production Cross Slides, Milling Attachments for Lathes, Globe Boring sets and bars.

THE GOVRO-NELSON CO., No. 119
1931 Antoinette St. Detroit, Mich.
Personnel: O. R. Aronson; M. H. Huth
Products: Automatic Drilling and Automatic Tapping

GRAHAM MACHINE TOOL CO., No. 1911
233 Centre St., New York 13, N. Y.
Persannel: Joseph Dunn; Marshall Norvick,
Products: High precision grinding and sharpening machines, milling machines, including the Cervinia No.
4 Universal Milling Machine (illustrated); a precision miller designed with a rigid column, an internally ribbed knee which is entirely closed on top

Cervenia Universal Milling Machine

Graham Machine Tool Co.



for maximum strength. This machine has a 60°x16° table and is supplied with power rapid traverse. Sabile may be switched through 45°. Spindle is of nickel-chrome steel, hardened and ground; gear box contains hardened and ground gears.

GRAYMILLS CORP., No. 224

Evanston, Ill.

New Products: Graymills Brush Flush, a small cleaning
unit which delivers clean filtered solvent through
the handle of a fountain brush. New Wirl type degressing machine. The sizes of tanks range from
5 to 300 gallons.

Produts: Coolant Pumps, complete Coolant Systems,
and matel cleaning equipment. 111

and metal cleaning equipment

GREEN INSTRUMENT CO., No. 805 386A Putnam Ave., Cambridge, Mass.

GRISWOLD MFG. CO., F. T. No. 832

Wayne, Pa.

New Products: Two types of alignment telescopes, an optical Cam Rise Gauge, a Level and a Drill "Point-Chek" Gauge.

Products: Above items; also Optical Dividing Heads, Indexing Table; Griswold Straight Edges and Scan-A-Scale, precision measuring, instruments.

Indexing Table: Griswold Straight Edges and Scan-A-Scale precision measuring instruments. GROBET FILE CO. OF AMERICA., No. 742 421 Canal St., New York, N. Y. Products: Complete line of Rotary Files, Burrs, Swiss Files, Rifflers, countersinks and special precision files for all models, hard and soft, of plastic, rubber, etc.

GULF OIL CO., No. 647 Gulf Bldg., Pittsburgh 30, Pa.

Guif Bidg., Pittsburgh 30, Pa.

Guiffery MacHinke Tool. CORP., Nes. 1827-1831

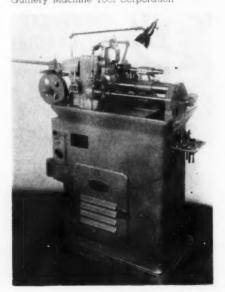
130 W 42nd 8t., New York 18, N. Y.

Personnel: Hermann Traub; Hermann Schott; Frank
G. Guthery; Frank U. Furth; Lou Johnson; James
Murray; and Peter Flesch,
New Products: Traub Single Spindle Automatic turning, drilling and cutting off lathe, built in three
sizes, with collet capacities of 19/32", 13/16" and

1". All models can be equipped with a single point
longitudinal turning attachment, allowing a maxlongitudinal turning attachment, allowing a max-

Traub Automatic Screw Machine

Guthery Machine Tool Corporation



e~ ≣INDEX CHUCK

with Air Operated Collet

Uses Brown & Sharpe type collets. Capacity: 1/16" to 2"

FC-28

V-29





Air Foot Control and Valve



COLLET AIR CHUCK

Uses Brown & Sharpe type collets. Capacity 1/16" to 31/2". Write for literature and prices



BOX 247

GUNTERSVILLE, ALABAMA





We specialize in CUTTING CAMS HIGH SPEED STEEL AND CARBIDE FORM TOOLS SPECIAL CUTTING TOOLS SPLIT DRILL BUSHINGS

CROSS SLIDE KNURL HOLDERS TOOL BITS BOX TOOLS BURNISHING TOOLS REVOLVING STOPS

RECESS SWING TOOLS FORMING SWING TOOLS

Detterbeck Quality Tools GEORGE L. Screw Machine Production

Our business is exclusively the manufacture of tools for screw machines. Over 40 years experience has built for us a national reputation for quality tools unexcelled anywhere in the world. Our plant is equipped with many special machines of our own design which perform the necessary operations with note-worthy accuracy. Our engineers, trained in this particular field are expert designers of production tools, consequently DETTER-

BECK QUALITY TOOLS perform with

BECK QUALITY TOOLS perform with guaranteed satisfaction. Under normal conditions we maintain 24 hour service. We carry large stocks of standard tools on hand for immediate shipment. During times of emergency our service is in keeping with raw material procurement. Your orders in our hands is your assurance of finest quality tools at a saving in cost . . dependable service in production.

NOTICE

It has come to our attention that another concern with a name somewhat similar to ours, has mailed out change of address notices to the trade which has misled some of our customers into changing our address on their records,

This notice is to correct any such impression. The address below is our correct address . . . and has been for over 40 years.

We have no branch factories.

Geo Joet erbeck

GEORGE L. DETTERBECK CO., Incorporated,

1871 Clybourn Ave., Chicago 14, III. ENGINEERS TO AN INDUSTRY

imum tarning length of 2%" depending upon part diameter and shape. Units use "Index" collets, and can be equipped to use standard B & S collets. Also: Traub Thread Cutting Machine and Traub diame and equip-Pointing Machine.

Har Pointing Machine.
Products: Above machine; also "Weisser" Production
Lathe: "Leinen" Turret Lathes (three models); and
"Leinen" Precision Lathe.

M & M RESEARCH CO., No. 128
6302 Horatio Ave., Detroit 10, Mich.
Personnel W. M. Smith; W. H. Smith and A. M.
Jerolmen

Jerolmon Products: Portable Electric Reciprocating Tools

He B. Machine Lieutre Reciprocating 1993

He B. Machine TOOLS, INC., No. 1890

He Madison Ave., New York 17, N. Y.
Personnel: Mr. Max Sebba; Mr. Wm. B. Liska
Products: H.E.B. High Speed Copying Lathe, Model
(IP for turning shafts, etc. (Illustrated); H.E.B.
Hydraulie Copying Lathe, Model GT for turning
molds, dies, etc. H.E.B. tool room and Production
Lathe, Model HN 250 equipped with a copying attachment: Constan Carbiod Tool and Cutter Grinder
Model 178; H.E.B. Automatic Chucks.

HAMMOND MACHINERY BUILDERS, INC., No. 1628

1000 Douglas Ave., Kalamazoo, Mich. ruonnel: Lee Hammond; S. H. Miller; Lee Albrecht; R. E. Miller; H. J. Kingsbury; Ramsey M. Bell; R. N. Shaw; and R. J. Ellis, The Hammond display will feature their 70th Personnel:

The Hammond display will feature their 70th Anniversay, (1882-1982). The reducts: Hammond No-Dust Grinder with built-in dust collector, Model CYO Cyclone Duskolector. Model CYO Cyclone Duskolector. Model WD-16 16" Hammond Wet or Dry Carbide Tool Grinder, Model WD-16 16" Hammond Wet or Dry Carbide Tool Grinder, Model CBO Variable Speed Polishing Lathe with Abrasive Belt Backstands and Belt Guard. Model CB-77 Chipbreaker and Diamond Finishing Grinder, (Illustrated). This unit handles all types of box and single point tools, accommodating all required angles. It is designed for both precision or production line basis. Reciprocating ball bearing table has 8" stroke. Model VC Motorized Solid Carbide Insert Grinding Fixture. Products:

H.E.B High Speed Copying Lathe

H.E.B. Machine Tools, Inc.



HANCHETT MAGNA-LOCK CORP., No. 645

Big Rapids, Mich.

Personnel: J. F. Manting; D. D. Stone; C. W. Adkins; F. W. Knopf.

Struck—for accurate an-

gular work holding during machining.
reducts: Magnetic Chucks—Actual sizes and styles reducts: Magnetic Chucks—Actual sizes and styles exemplifying the entire line including Rotary, Rectangular, Swivelling, Angular, Sine and Special Types. Used as holding devices on milling machines, planers, boring Mills, Grinders, etc. Magna-Visefor holding non-magnetic material on Magnetic Chucks, Magnetic Coolant Separator—for separation on swarf from coolant compounds used on machine tools. Magnetic Chuck Accessory Equipment—used for energizing and demagnetizing magnetically energized parts and equipment. gized parts and equipment.

gized parts and equipment.

HANDY & HARMAN No. 1818

22 Fulton St., New York SS, N. Y.

Products: Two silver alloy brazing demonstrations.

One will show a typical production set-up. Two steel
parts used on "dropable" fuel tanks for jet engines
will be brazed with Easy-Flo on a simple. low-cost
heating unit using gas-air for heat. The other will
include a torch brazing station where the interest will
center around the brazing of cemented carbide tips
to tool holders. A collection of samples of brazed
parts will be shown, indicating how manufacturers
are using Easy-Flo and Sli-Flos silver brazing alloys
for a variety of work. for a variety of work.

HANNA ENGINEERING WORKS., No. 1625

1765 Eiston Ave., Chicago 22, Ill.
Personnel: E. L. Foster W. G. McIntoh.
Products: Low Pressure (Air & Hydraulic) Cylinders,
High Pressure (Hydraulic) Cylinders, Valves: Hand
Operated, Foot Operated, Electrically Operated, Pilot, Pilot Operated and Speed Control.

HANNIFIN CORP., No. 1609 1129 S. Kilbourne Ave., Chicago 24, Ill.

HANSFORD MANUFACTURING CORP., No. 150

HANSFORD MANUFACTURING CORP., No. 150
1239 University Ave., Rochester, N. Y.
Persennel: V. N. Hansford; John G. Schalk.
Products: The Die Handler, a device for the safe
handling and taking apart of heavy dies. It will
handle dies up to 24" wide, 43" long, shut height
from 9" to 14", and weighing up to 1 ton. The
upper platen, with an area of 20" x 42" has a vertical
travel of 16\foralleft'. Platen may be rotated 360" by
a hand crank; a locking pin may be used at five
convenient angular positions. convenient angular positions.

HANSON-WHITNEY CO .. No. 829 Bartholomex Ave., Hartford 2, Conn.

Chip Breaker & Diamond Finishing Grinder

Hammond Machinery Builders



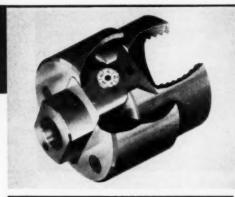
SAMSON Offset BORING CHUCKS

THESE JOB-PROVEN FEATURES WILL SAVE YOU TIME AND MONEY

- · Quick tool change
- Positive dead-centering
- Precision offset adjustment
- Rugged tool support
- Safety round contour

Complete Boring Chuck Accessories Available

WRITE FOR COMPLETE DETAILS



FAMOUS
LAST WORD
WHEEL
DRESSER



LAST WORD SALES CO. . 18500 Mt. Elliott . Detroit 34, Mich.



PRECISION LIVE CENTERS

GUARANTEED ACCURATE TO .00005"

The QUADRO PRECISION LIVE CENTER is designed to support the heaviest load at highest speed for the LONGEST TIME—and will outlast dead centers many times over!

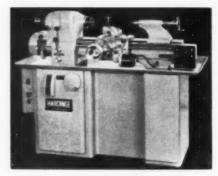
Each QUADRO CENTER eliminates friction and two double row precision pre-loaded ball bearings absorb combined radial and thrust. In use on a lathe, miller or any other machine tool, it will give you every penny's worth in production.

See your regular supply dealer for complete information, or write to:

DAKON

TOOL & MACHINE CO., INC. 496 Broadway, Brooklyn 11, N. Y.

"TWO DECADES OF IMPORTANT TOOL PARTS PRODUCTION"



Model HLV Tool Room Lathe

Hardinge Brothers, Inc.

HARDINGE BROTHERS, INC., No. 1516

Products: Model HLV Lathe for tool room and produc-tion work (Illustrated). This unit fills the gap be-tween the plain precision bench lathe and the heavy duty engine lathe. It is equipped with an indepen-dent variable feed for carriage and cross slide, so dent variable feed for carriage and cross slide, so the rate of feed can be changed instantly without stopping to shift gears. Variable spindle speeds of from 125 to 3000 r.p.m. Power feed range is from ½" to 7" per minute. Collet capacity, round is 1"; hexagon is "5,"; and square "4,". Swing over bed is 11". Also to be shown: Master Collets and Index

R. G. HASKINS CO., No. 333
2651 W. Hardison St., Chicago 12, Ill.
Personnel: George R. Haskins; E. P. Grismer; L. D.
Bowden; and J. L. Smith.
New Products: Line of new high speed flexible shaft
grinders using new design variable speed pulleys.
Featured is the Model HC-5 unit, furnished with

HC-S Flexible Shaft Grinder

R. G. Haskins Co.



a ½ h.p. air jacket, totally enclosed fan cooled motor and Timken bearing countershaft to give aix speeds, from 750 to 3940 r.p.m. for performing various grinding, sanding, wire brushing, rotary filling, rubbing and polishing operations. Products, Flexible shaft grinding, sanding, wire brushing and polishing machines and accessries. Electric driven, flexible shaft and direct drive screwdriving and nut setting machines, High Speed steel and carbide rotary files. Machines will be operated for demonstration purposes.

HAYNES STELLITE DIVISION No. 1122 Union Carbide & Carbon Corp., New York, N. Y.

HEINTZ MANUFACTURING CO., No. 424 hiladelphia, Pa.

HELI-COIL CORP., No. 316
Shelter Rock Lane, Danbury, Conn.
Personnel: E. Baruch; H. O. Haas; H. W. Cram;
C. E. Glichel; S. W. Anderson; Walter Spreen;
J. Hodgon; H. Getsler; John Marshall; and H.

New Products: Four new small sizes of Heli-Coil screw thread inserts. Products: Heli-Coil screw thread inserts and tools for their installation.

HENRY & WRIGHT No. 1325 Hartford 1, Conn.

Hartford 1, Conn.

New Products: 60-ton high speed Dieing Machine with
an operating range of 155 to 475 strokes per minute.

Machine produces one completed rotor and one completed stator lamination at each stroke from a mul-tiple-station progressive die.

HERCULES PRESSES LIMITED No. 1031

HERCULES PRESSES LIMITED No. 1923
Toronto, Ontario, Canada.
Personnel: Tom H. Blair; George F. Milliken.
New Products: Rhodes Anti-Deflection 45-ton capacity
O.B.I. Press; Also Rhodes Simplex Drawing attachment, drawing a cup 1% deep in a 3" stroke press.
Both machines in poeration.

THE HERMAN STONE CO., No. 814 Dayton, Ohio

HESTON & ANDERSON DIV. of St. Paul Foundry & Manufacturing Co., No. 430 Fairfield, Iowa.
Personnel: J. D. Angstead; William Diener; H. P.

Owen. ow Products: Xpeditor, deburring machine; Abrasive Belt Grinder; H & A Swing Saw with Air Opera-ting Unit

Products: H & A Swing Saw with Air Operated Unit and the Xpeditor

High Speed Dieing Machine

Henry & Wright





Houdaille Web Type Filter

Honan-Crane Corporation

HITCHCOCK PUBLISHING CO., (Machine and Tool Blue Book) No. 418
222 E. Willow Ave., Wheaton, Ill.
Personnel: Robert C. Van Kampen; Vincent C. Hogren;
J. Morris Gustafosn; William F. Schleicher; H.
Louis Purdy; James C. Stewart; Henry J. Smith;
Ralph E. Helfrick; Dan E. Reardon,
Products: Machine and Tool Blue Book

HOFMANN NEEDLE WORKS, INC., No. 1715 West New York, N. J.

HONAN-CRANE CORP., No. 1716

Lebanon, Ind.

New Products: Houdaille Web-Type Filter, an automatic self-cleaning unit for individual machine tools or small central coolant systems; utilizes endless web-type filter belt. Unit is fully automatic; speed

No. 1 Plain Milling Machine

Index Machine Company



or belt can be increased or decreased to meet varying volume of coolant flow, Available in capacities from 40 to 400 g.p.m.

40 to 400 g.p.m.

Products: Houdaille Automatic Clarifier, for filtering large volumes of machine tool oils and coolants supplied by a central coolant system; Houdaille Magnetic Filter, a magnetic filter unit for individual machine tools; Mobile Coolant Filter; Houdaille Conveyor; Sump Cleaner, Filter and Purifier Unit, HUEBNER PUBLICATIONS, INC., No. 339

Conveyor; Sump Cleaner, Filter and Purifier Unit, HUEBRER PUBLICATIONS, ING., No. 339
Cleveland, Ohio
HYDROWAY SCALES, INC., No. 108
P.O. Box 4754, Detroit 19, Mich.
Personnel: William M. Wise; Louis A. Wise; A. A. Caille; J. R. Davis; J. H. Stewart; M. Ericson; William P. Beid and representatives from Midwest Industrial Truck & Supply Co., Chicago, Products; Hydroscale—Hydraulic Crane Scale for weighing loads as they are lifted, with capacities from 500 to 100,000 bs. Hydrostand—Fabricated stand for holding the Hydroscale when not in use equipped with locking bar for movement by crane and with casters for easy hand movement.

JEAL INDUSTRIES, INC., No. 642
1441 Park Ave., Sycamore, Ill.
1414 Park Ave., Sycamore, Ill.
1415 Tool. WORKS, No. 1223
2515 N. Keeler Ave., Chicago, Ill.
1716 Products: A variety of engineered metal cutting tools, including holos, broaches, shaper cutters, milling cuters, form tools and special tools with special attention directed to the "Technical Library" prepared by the firm for free distribution to cutting tool users. This "Library" consists of a compilation of booklets dealing with the various phases of efficient metal cutting tool application and maintenance. Highlight of the display will be a sound-side presentation on gear quality control. Also: Gear Rolling Fixture used to check gears on the production line.

INDEX MACHINE CO., No. 148
543 N. Mechanic St., Jackson, Mich.
Personnel: G. S. Adams; H. T. Andress.
Products: Model 56 Plain Horizontal Milling Machine: Model 40 High Speed Vertical Milling Machine: Model 56 Plain Horizontal Milling Machine: Milling

Gear Rolling Fixture Illinois Tool Works



Multiple Nut Runner

Ingersoll-Rand Company

INDUSTRIAL TECTONICS, INC., No. 315
Ann Arbor, Mich,
Products: complete line of precision special alloy halls, showing balls made out of Tungsten Carbide, Stellite Alloys, Chronium Carbide, High Speed Steels, Synthetic Sapphire, Ceramics, Special Alloy Stainless Steels, Silver Alloys and others.

INGERSOLL-RAND CO., No. 1639
11 Broadway, New York 4, N. Y.
New Products: I.R Air-powered Multiple Nut Runner

Radius and Angle Wheel Dresser

I & S Tool Company



(illustrated), featuring quality control; torque is uniform on every nut; two or more nuts are driven at once, in the time formerly required to drive one; operator safety, due to non-existent torque reaction; unit is simple to operate, requiring no special training. Also new I-R Air Compressor design, a modern package-type heavy-duty electric driven compressor.

INTERNATIONAL HARVESTER CO., MFG. RE-SEARCH DEPT., No. 615 Chicago, III.

THE IRON AGE, No. 800 100 E. 42nd St., New York 17, N. Y

J & S TOOL CO., INC., No. 1922
East Orange, N. J.
Personnel: Henry Swenson; Clifford C. Baker; Andrew

Laczko M. Laczko.

New Products: Radii and Angle Wheel Dresser which
dresses two angles tangent to a radius in one continuous motion. The maximum wheel diameter—24".
The unit is especially designed to adapt to cylindrical grinders.

Products: J & S "Fluidmotion" Series of Radii and
Angle Wheel Dressers. J & S "All Purpose" Jaw
Clamps. J & S Non-Ferrous Clamps, J & S Tool
Grinder Vise.

JANNEY CYLINDER CO., No. 324 Philadelphia, Pa

CHAS. L. JARVIS CO., Nos. 1534 and 1542

CHAS. L. JARVID CU., M. Middelon, Conn. Middleton, Conn.
Personnel: R. Wetzel; D. Wilkes; R. Matzen; I. Savage; R. Resee; H. Gotta; A. Landry; M. Buehler; W. Blomer; G. Gundersdorf; H. McMeken; W. Shaw; and J. Kelly.
New Products: Tungsten Carbide Drills, Tungsten Carbide Resmers, other ground-from-the-solid tungs.

Carbide Reamers, other ground-from-the-solid tung-sten carbide tools. Multiple spindle Tapping and Drilling Heads, fixed as well as adjustable center

Products: Flexible Shaft Machines, Torqumatic Tapping Attachments. High Speed Steel Ground-from the-Solid Rotary Files, Jarvis Taps, Tungsten Carbide Rotary Files.

G. JERGENS CO., No. 743

1106 Aron Ave., Cleveland 5, Ohio,
Persannel Philip F, Donley; Arthur Seed; Roland
Seed; and Thomas Walker.
New Products: Jergens Roller Bearing Pilot Bushing
Pressure Rolls; Heavy Duty Live Centers; Needle
Bearing Pilot Bushing; Steel Mill Steady Rest &
Back up Rolls Back up Rolls.

JERGENS' TOOL SPECIALTY CO., No. 350
712 E. 163rd. St., Cleveland 10, Ohio
Personnel: Albert Schultz; Jack H. Schron.
New Products: Sine Fixture Key that eliminates five
operations heretofore necessary in milling fixture
key clus. slots.

Products: Jergens Line of Standards; Sine Fixture Keys: Chuck Jaw Blanks; and Aluminum controls.

JOHANSSON & WINDLE CO., No. 1840

Skokie, III.

Products: Milling machines to be shown are flexible, universal. The heads can be swiveled for work at any angle desired. Machines can accommodate very small parts as well as medium-sized work. All feedscrews are precision ground and mounted in pre-loaded ball bearings. Ways are precision handscraped, Other features: positive quill lock, and micrometer depth stop graduated in thousandths of an inch.

B & V Collet Chuck

Eric S. Johnson Co.



CARBOLOY TIPPED SCRAPER BLADES

Available in three widths



THEY LAST 8 TO



Especially good for hard alloy iron and extremely hard bronze castings. If you are using Anderson Hand Scrapers it is not necessary to buy complete new scrapers in order to use carboloy tipped blades. Simply remove high-speed blade and slip in the Anderson Carboloy Tipped Blade.

Write for Bulletin No. 3-5

ANDERSON BROS. MFG. CO., Rockford, Ill.

Balancing Ways, Roto Checkers, Hand and Power Scrapers, Spotters, Hand and Power Hydraulic Straightening Presses.



C. E. JOHANSS Gage Co., No. 701 8900 Alpine Ave. JOHANSSON GAGE CO Division of Swedish

Detroit 4, Mich.

rersonnel; E. C. Lindman; Edward Johansson; Ernle Johnson; Gust Peterson; Clarence Gist. Idea Products: Minnikator and Dynamometer Products: Johansson Gage Blocks, Mikrokator Amplifier, Johansson Internal Indicators, Minnikators, Surface, Finish Indicators, Dynamometer, Hardwood, Finish Indicators. Dynamometers,

ERIC 8. JOHNSON CO., No. (11 230 East Obto St., Chicago, III, Personnel: Andrew S. Johnson; E. Caristen; Eric S. Johnson; A. H. Wordell; and L. C. Johnson New Products: SPV Tanpoing Atlachments, SPV Drill Chucks, B. & V. Collet, Chucks (Hustrated) with cw Products: SPV Tapping Attachments, Sev. Ditt. Chucks, B & V Collet Chucks (illustrated) with assured gripping power, faster cutter changes, smaller external dimensions; guaranteed accuracy, greater rapacity range. The cutter is protected by an explusive rubber cushion in the upper recess of the chuck body.

JOHNSON GAGE CO., No. 829

10 H NSON GAGE CO., No. 829

Hloomfield, Conn.
Personnel: Stanley G. Johnson; F. B. Murphy
New Products: Exhibit is based on the Johnson System
of Screw-thread Gaging and Quality Control. It includes "fixed" type Ring and Snap Gages for conventional inspection and "attribute" type quality
control. and "indicating" type Comparators for conventional inspection and "variable" type Quality
Control. The Ring-Snap and Roll-Snap Comparators
embody the fundamental principles of Johnson Gage
Design for determining Screw-thread Accuracy and
Assembles-ability. Assemble ability, oducts: Various special comparator applications are

Products: also included that involve squareness and concen-tricity checks. The Johnson "Setting and Wear-Check" Plug Gages—means for determining degree and type of wear in Thread Gages and Comparators— are also exhibited.

S. C. JOHNSON & SON. INC., No. 104

Bacine, Wis. Personnel; J. B. Carse; G. L. Boehm; Geo. Petersen;

Optical Comparator

Jones & Lamson Machine Co.



J. C. Tarvin; R. F. Farley; and R. H. Deihl. New Products: No. 140 Stik Wax for tapping, drilling sawing, etc. Wax Coolants.

sawing, etc. Wax Coclants.

Products: Metal forming waxes for deep drawing, stamping, piercing and blanking, impact extrusion, but forming of magnesium, etc.

JONES & LAMSON MACHINE CO., No. 1411

New Products: Along with seven different models of comparators, J & L. will feature a Power Elevation Attachment—a self-contained motor drive unit which will raise or lover the work table faster than it can be positioned by hand, greatly increasing the convenience of operation Also: J & L Tracing Attachment, 5X-6-inch lense for comparators, and two threading operations using J & L die heads.

KALAMAZOO TANK & SILO Co., MACHINE TOOL DIV.. No. 1023 Kalamazoo, Mich.

KAUFMAN MFG. CO., No. 1926

KAUFMAN MFG. CO., No. 1926

Manitowoe, Wis.

Personnel: L. J. Kaufman; Earl W. Haugh; R. F.
Dornaus; Orland Hall; Louis Koneen; V. J.
Ceakisk; Orville Elchman; and Howard Wigen.
New Products: No. 75 Hydraulic drilling and tapping
machine, neumatically operated and controlled, including the index. Tapping and reaming heads are
arranged for single spindle drilling and tapping or
reaming and threading. Standard flances are provided on the quills to allow the mounting of multiple heads to accommodate as many spindles as
might be required. Drive is through V-belts to a
6-speed transmission.

6-speed transmission.

Products: Standard pneumatically controlled tapping machines.

KELVIN SYSTEMS CORP., No. 2050 South Norwalk, Conn.

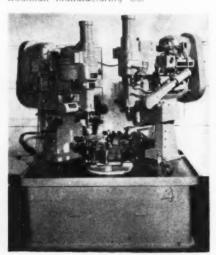
KENNAMETAL INC., No. 1723

Lattobe, Pa.

Personnel: Philip M. McKenna; Alex G. McKenna;
W. D. Turnbull; Bennett Burgoon; W. L. Kennicott;
James McCreery; C. J. Marlett; Fred W. Pennington;
S. J. Repko; F. J. Lennon; F. B. Gerard; Donald
Shick; John Keefe; Richard McKelvey; J. seph Bick,
New Products: "KF" Kennamill designed primarily
for steel production milling runs where adequate
horsepower is available, and where intermittent or

Drilling and Tapping Machine

Kaulman Manufacturina Co.







MARSHALLTOWN

FOR LONG LIFE
DEPENDABILITY
PERFORMANCE

Engineered and built to give the utmost in dependable, trouble-free service. More die space—chrome molybdenum cranks, wrist pin connections and many other proven advantages.

Write Today For Literature

MARSHALLTOWN MFG. CO.

900 E. NEVADA STREET
MARSHALLTOWN
IOWA



Model KF Kennamill

Kennametal, Inc.

narrow cuts are encountered. It is also suited for heavy cast iron cutting. The cutter is mountable on any common spindle. It has heavy construction and great rigidity, ample wedge clamping area and "freeze-proof" assembly—no threads in the body to strip out. Chip clearance is provided for heaviest cuts. Blades are advanceable in the direction of cut and can be set to tolerances.

Products: Single point tools brazed, solid and mechanically held, in a variety of styles and sizes; milling cutters of various types, including the MF avial Kennamill and the KF radial Kennamill. narrow cuts are encountered. It is also suited for

KLINGELHOFER MACHINE TOOL CO., Nos. 2000.

901, and 1902
20 Prospect M., Westfield, N. J.
Persannel: A. Klingelhofer; G. Kohlmann; J. F.,
Terry, Jr.; A. Klingelhofer, Jr.; and O. C. Miller.
New Products: "Webe' Super-Sensitive and Sensitive
Drilla, Upright Drills

Mammut SE-20 Machine

Klingelhofer Machine Tool Co.



and Hydraulic Shapers. Mammut Heavy Duty, Knee Type, Horizontal and Vertical Milling Machines sillustrated), with rigid column, heavily ribbed for strength; all shafts and gears are made of high alloy steel, running in an oil bath. Sixten spindle speeds, ranging from 40 to 1200 r.p.m. are available. Twelve speeds of from 615° to 22° min are pro-vided, Unit is powered by a 12 h.p. electric motor. Also MSO Cylindrical Grinders Blohm Surface Grinders, Praewena Toolroom and Small Turret Lathes. Lathes.

THE KORFUND CO., INC., No. 1011
i8-15 32nd Place, Long Island City I.N. Y.
Persannel: S. Rosenzweig; D. Vance; N. Creash; A.
Byfield; G. Zintel; L. W. Fahning; M. B. Chalfen;
and F. N. Pirsch.
Products: Korfund L.K. Vibro Isolators, Spring Type,
Korfund Cork Products, Korfund Rubber Products,
Korfund Duplex Twin Bail Fan and Motor Base

KURT ORBAN CO., INC., No. 1000 205 E. 42nd St., New York 17, N. (see ORBAN CO., KURT)

LANDIS MACHINE CO., No. 1918 Waynesboro, Pa.

LAPEER MFG. CO., No. 325 Lapeer, Mich.

Laper, Mich.

LAST WORD SALES CO., No. 438

18500 Mt. Elliott Ave., Detroit 34. Mich.

Products: Last Word Wheel Dresser, offering complete simplicity in setting and adjusting; unit can be used for accurate precision wheel dressing with any two angles tangent to a radius, concave or convex. The machine dresses at the base of the wheel, permitting the use of the dust collector. Also, Samson Offset Boring Chuck.

LATROBE ELECTRIC STEEL CO., No. 1732

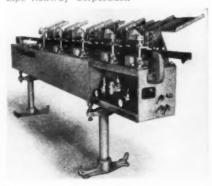
LATROBE ELECTRIC STEEL Co.,
Latrobe, Pa.,
Products: The company's display emphasizes the need
for high quality standards for tool and die steels
to meet the demands made by modern metalworking
industry. Latrobe's "Desegatized" high speed steels
and high carbon-high chromium steels displayed.
Comparisons of ground, polished and etched inspection discs cut from "Desegatized" and average

process steels.

K. O. LEE CO., No. 347
Aberdeen, S. D.
Personnel: James R. Longwell: A. V. Bloomquist;
Don C. Stablein; Julio S. Santos; A. R. Hofmann;
Delo Lee; Eric Schubart; Leo A. Green; M. E.
Hunstad; and Matt Rozgay.
Products: Universal, tool & cutter, carbide, and chip
breaker grinder; grinder accessories and fixtures,
expanding mandrels, keyless drill chucks, abrasive
wheel dressers, chuck center sets, reaver drives,
adjustable reamers, tool post grinder, and pertable

Magazine Loading Bar Feed

Lipe Rollway Corporation



LEIMAN AIR PUMPS give you Greater Capacity!

provides 2 to 3 times more area,

per size and weight of pump.



What's your air application? Leiman engineers offer over 60 years experience on thousands of air applications.

Catalog and Application Data sent on request.

For Pumps - write DEPT. A

Leiman Bros., Inc., 173 Christie St., Newark 5, N.J.

Handle your pressure, vacuum or suction jobs with much smaller Leiman Air Pumps. Save weight and space—run at lower r.p.m.—have fewer moving parts—no springs, gaskets or packing—no tips to renew—nothing to give trouble.

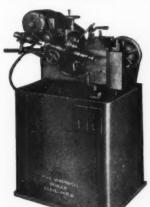
Metal Cleaning and Finishing without acids or scratch brushes

LEIMAN SANDBLASTS

Fas', low-cost, safe, uniform way to clean scaly, rusty rough surfaces — prepare for plating and finishing — stencil letters and designs — more rapid matte or satin finishes. Use un skilled help. Fo-Sandblasts — write DEPT. B.



Grinds straight flutes



take up their own wear

Indexes Automatically SHARPENS TAPS, SAWS

A versatile straight flute grinder that will:

- a) Sharpen taps
- b) Sharpen Saws in Gangs
- c) Sharpen Reamers
- d) Grinds straight flutes from solid
- e) Spiral points
- f) Sharpen milling cutters, Woodruff key cutters Write for bulletin on 50F Automatic Universal Flute Grinder. Wardwell Manufacturing Co., 3165 Fulton Rd., Cleveland 9, O,



LEES-BRADNER CO., No. 2030 12120 Elmwood Ave., Cleveland 11, Ohio

LINDBERG ENGINEERING CO., No. 1333
2442 W. Hubbard St., Chicago 22, III.
LIPE-ROLLWAY CORP. No. 1525
806 Emerson Are., Syracuse I. N. Y.
Personnel: E. S. Mariotte; Paul Klix; and Bernard

Products: Automatic Magazine Loading (AML) Bar Feed actuated by pneumatic control system of valves and cylinders. Unit requires no feed fingers; it feeds entire stock har to the last work piece length. It ejects the end remnant automatically without the attention of the operator. Machine is stated to prostor.

duce maximum screw machine output.

J. LITTELL MACHINE CO., No. 2013
4127 Ravenswood Ave., Chicago 13, III.

4127 Ravenswood Ave., Chicago 13, Ill.

10GAN ENGINEERING CO., No. 1130

4901 W. Lawrence Ave., Chicago 30, Ill.

New Praducts: New tool room lathe, an 11" swing model with 1" collet capacity will be shown. Lathe is built throughout to tool room standards of accuracy and quality. A draw-bar collet attachment is built in and supplied as standard equipment; a collet rack that clamps to the bed is also furnished. Carriage includes finished ground cross slide ways. A new compound base switel provides additional rigidity with positive locking. The 360-dial has reference marks on both her right and left side, and is designed for easy reading.

LOGANSPORT MACHINE CO., INC., No. 1529

Logansport, Ind.
Personnel: L. R. Burger; Richard Fiscel; and H. L.

Products: Complete line of air and hydraulic equip-ment including cylinders, valves, power units, chucks, coolant pumps, tube fittings and lubricators. Dis-play features two lines of power units.

LOVEJOY TOOL CO., INC., No. 1109 Springfield, Vermont

LUFKIN RULE CO., No. 809

LUFKIN RULE CO., No. 809
Saginaw, Mich.
Personnel: Lewis Barnard, Jr.; E. H. Melbeyer; W. F. Rockwell; G. R. Carpenter; R. M. Benjamin, Al Hillert; Richard Lone; G. T. Schlitt; R. T. Young: and T. P. Young.
New Products: Lufkin No. 399A Dial Indicator Products: Precision Tools, Tapes, Rules, Gages.
M.-B PRODUCTS, No. 1217
46 Victor Ave., Detroit 3, Mich.

M.B.I. EXPORT & IMPORT, LTD., No. 2025. Bronx 51, N. Y.

MACHINERY (THE INDUSTRIAL PRESS) No. 846 148 Lafayette St., New York 13, N. Y.

Hydraulic Power Unit

Logansport Machine Company



MACKLIN CO., No. 841
Jackson, Mich.
Personnel: H. E. Boschulte; R. Brandt; D. Kersting;
J. Murphy; M. T. Hunt; B. L. Gray; and R. C.

J. Merroby; M. T. Hunt; B. L. Gray; and R. C. Frankin.
Products. Grinding Wheels and Abrasive Products.
MAGNA ENGINEERING CORP., No. 308
Menlo Park, Calif.
MAGNAFLUX CORP., Nos. 1117 and 501
5900 Northwest Hwy. Chicago 31. III.
Personnel: W. E. Thomas; R. O. Schieble; R. N. Baughman; K. Van Kirk; H. Migel; K. Skeie; C. Racine; A. Lindgren; D. P. Walsh; F. Catlin; Products: Booth 1117: Loslac automatic punch press feeder Booth 501: A variety of Non-Destructive Test methods and equipment in demonstration operation. Process control. final quality inspection, and plant maintenance inspection to find cracks and similar defects in all types of materials: metals, non-metals, ceramics, plastics, etc. plastics.

MANHATTAN RUBBER DIVISION, No. 441

Raybestos-Manhattan. Inc., Passaic, N. J. Personsel: W. H. Steinberg; L. S. Hilton; Harman Ahlers; P. E. Tiemann; E. E. Marlowe; K. A. Tamms; E. G. Wilk; O. G. Harris; and Thomas

Carey
Products: Manhattan Abrasive and Diamond Wheels;
demonstration of Manhattan Cut-Off Wheels; Manhattan Moldiso will be shown in operation.
MARTINDALE ELECTRIC CO., No. 1212

MARTINDALE CO., No. 1021

Cleveland, Ohio PRODUCTS INC., No. 1021

414 Ford Bidg., Detroit 26, Mich.

MASTER MFG. CO., No. 205

Hutchinson, Kansas, CO., No. 109

Hutchinson, Kansas.

MASTERFORM TOOL. CO., No. 109
9306 Belmont Ave., Franklin Park, Ili
JAS. H. MATTHEWS & CO., No. 1318
3346 Forbes St., Plitsburgh 13, Pa.
Personnel: W. J. Bickmore; C. A. Banze; C. B. Calder; P. A. Fitzsimons; and Milton Field
New Products: Matthews 204-CR Reciprocating Head
Marking Machine; designed to impress extra deep
marks on tough metal surfaces without exerting
extreme pressures and shock to the parts being
marked or where parts are of such design that they
will not withstand necessary pressure required to
make the mark in one pass. Operates at 100 lbs.
min. air pressure p. 5.1.

min air pressure p.s.i.

Prodets: Matthews "Airgrit" Marking Machine; Matthews "222" Nameplate Marking Machine; Matthews

Reciprocating Head Marker

Jas. H. Matthews & Co.





4-Way Solenoid Operated Air Valve Mechanical Air Controls

"Unitag" Embossing Machine; Steel hand clamps; Steel marking dies; Nameplates; Checks (Metal); Metal badges; Steel type holders; Matthews 204-CR Reciprocating Head Marking Machine; Miscellaneous Marking Devices.

THE MCCASKEY REGISTER CO., No. 505

THE MCCASKET REGISTER CO., NO. 380
Alliance, Ohio
Personnel: C. Swoboda; E. G. Crane and H. P.
Crane; F. H. MacNaughton; E. J. Kuhn; I. W.
Dickey; F. E. Henry III; and David Cameron.
New Products: Gage Control providing lifetime records
of each unit; simple procedure for assuring inspection
according to predetermined schedule, complete accountability for gages loaned to employees, activity

Sorting and Segregating Machine

Merz Engineering, Inc.



or usage data, etc. Procedure recently developed for defense plants requiring the closest possible control of gages and quality: Quality control forms de-veloped for the plants also will be shown. Products: McCaskey Industrial Control Systems in-cluding: Tool Crib Control; Tool Order Scheduling and Progress Control; Production Control Systems and Forms; Machine Loading Scheduling and Job Assignment; Inventory, Cost and Payroll Controls; Maintenance Control, etc. McCaskey Wall Boards, Cabinets, Slipbolders, Pyralin Envelopes and mul-tiple copy Factory Forms. Forms. Factory

Capinets. Suppoiders, Fyraiin Envelopes and multiple copy Factory Forms.

McGROSKY TOOL CORP.. No. 1227
1952 Thomas St. Meadville. Pa.

MECHANICAL AIR CONTROLS No. 2012
Boyal Oak, Mich.

New Products: New ½" "MAC" 4-way solenoid operated apring return air valve for actuating double acting cylinders has a full ¼" pipe orifice area through the valve, and operation is by direct solenoid control and spring return of aluminum apool which is the only moving part in the unit. Special "O" rings mounted on this spool act as seals when they come in contact with the bores of the body and end cap retainers. Valve measures 5" long, 2½" wide and 2½" high. Current requirements of the solenoid are only .8 amps invish and .2 amps holding at 115 voit, 60 cycle.

MERZ ENGINEERING INC., No. 814
200 S. Harding St. Indianapolis, Ind.
Personnel: L. B. Vanderborst; A. M. Love; C. D.
Schuman; Malcolm P. Haines; and Miklos Sperling.
New Products: Production Sorting Machines including Sorters, Rivet Sorting, and Contact Sorting Machines.

Products: Sorting Machines, Electronic Comparators, Electronic Height Gages, Air Gages, AGD Standard Gages and Precision machined Aircraft parts.

Gages and Precision machined Aircraft parts.

METAL CARBIDES CORP., No. 739
107 E. Indianola St., Youngstown, Ohio
Personael: R. T. Reeghey; J. Workman; J. Ritz;
J. L. Fuller; W. E. Burke; G. R. Brisben; A. B.
Christman; and G. E. Myers.
New Products: Tungsten Carbide Rolls 30" long, Carbide tipped Shear Blades 84" long, Carbide Blost
Strips, Bars and Tubes 100" long, Carbide Dies
30" Diameter. New Style "Klamp-Lok" Insert Type
Tool Holders Tool Holders

Products: Cutting Tools, Draw Dies, Drill Jig Bushings, Centerless Grinder Blades, Lathe Centers, Diamond Wheels and Wheel Dressers, Tungsten Carbide Blanks and Tips.

METAL CUTTING TOOLS, INC., No. 200

METAL CUTTING TOOLS, INC., No. 200
Rockford, Ill.

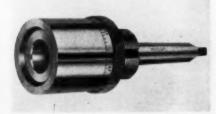
New Products: Stop Collar and Stop Nut Holder, featuring precision adjustment and simplicity for setting up specified-depth and cutting operations. The depth of cut may be regulated by stopping the adjustable collar or nut against the jig or work piece being machined. Also: standard Pin Drive Counterbores in package form and a new handbook for users of end cutting operations.

Products: Standard and special End Cutting Tools for metal, including counterbores, countersinks, back spotfacing cutters, core drills and special combined-operation cutters.

operation cutters.

Stop Collar and Stop Nut Holder

Metal Cutting Tools, Inc.



METAL LUBRICANTS CO., No. 1811
3211 S. Wood St., Chicago S. III.
Persannel: Hull Henkel; Arthur L. Henkel; W. E.
Williams; Frank J. Lloyd; Wm. Kruck; E. J. Veset;;
C. E. Rieger; George K. Barton; J. J. Boland Jr.;
Carl Licht; and W. H. Smith,
New Products: Lubriplate Nos. 905, 907, 910—Patented,
high temperature, synthetic "soan-less" base greace.
Melsol Allpurpose, a new type of water-soluble roncentrate that gives a permanent solution with water centrate that gives a permanent solution with water instead of the conventional emulsion; is possesses extremely high cooling, lubricating and load-carrying characteristics. Metalub No. 500B, Metalub No. 500. Metalub No. 1010, Deep Drawing Compounds. Mei-quench No. 202.

characteristics.

Metaluh No. 1916, Deep Drawning
quench No. 292.

Product: Metalworking products from company Melkut
Product: Metalworking products from company Melkut
Product: Metalworking oils, Metalub line of drawing comquenching oils, as well as line of cratting oils, Metalub line of drawing com-p-ands. Melquench line of quenching oils, as well as the labriplate oils and greases.

METAL REMOVAL CO., No. 535 1540 N. Orleans St., Chicago, Ill.

METRO TOOL & GAGE CO., No. 734

Chicago, III.
F. MEYERS CO., No. 1826
Regional Ind. w

1017 14th St., Bedford, ersonnel: W. V. Albr dford, Ind, Albright; R. L. Quackenbush;

Albright, R. L. Quackenbush, Leonard Armstrong. Meyer Carbide Inserted Drill Bushings, Meyer Carbide Tipped Circular Saws; Meyers Roll-form Wheel and Tool Former; and Meyer Special Carbide Tipped Tools. Products:

MICHIGAN TOOL CO., No. 1200 7171 E. McNichols Road, Detroit 12, Mich.

MICRO-LATHE-PLATE, INC., No. 309

MICROMETRICAL MANUFACTURING CO., No. 732 (femerly Physicists Research Co.)

MICRO-POISE ENGINEERING & SALES CO., No.

Detroit, Mich DIV. of Minneapolis, Honeywell

MICRO SWITCH, DI Regulator Co. No. 509 Freeport, Ill Per onnel: J. V. Manni Per onnel: J. V. Manni J V Manning; Nick Kouzmanoff; A. Ken Wood; Walker Smith; and T. Kibbler:

New Products: 1ML1 Micro Precision Limit Switch. Products: Precision Snap-Action Electrical Switches.

MILFORD RIVET AND MACHINE CO., No. 2004

MILLER MOTOR CO., No. 1731
2040 N Hawthorne Ave., Melrose Park, Ill.

Products: tylinders in actual operation; also the company's 'College of Cylinder Knowledge,' a traveling bus unit fitted with live-action displays of Miller pany's "College of Cylinder Knowledge," a traveling bus unit fitted with live-action displays of Miller cylinders, this unit will travel to interested plants

Pneumatic Comparator Gage

Moore Products Co.



throughout the country, derion trating "Preventive Maintenance," the keynote of the company's display, Also, displays of "boosters" for saving space and weight, cutting costs and increasing efficiency in welding, punching, shearing, riveting and similar

welding, punching, shearing, riveting and similar operations.

A. MILNE & CO., No. 120
715 Washington St. New York 14, N. Y.
Personnel: H. S. Hoyt; J. King Hoyt, Jr.; H. S. Hoyt Jr.; H. S. Hoyt Jr.; H. S. Hoyt Jr.; H. S. Hoyt Jr.; H. S. Silk; C. C. Pinkney; H. D. Groth; J. I. Kitts; W. F. Goetz; E. J. Hovey; and C. M. Brebe.
Products; Milne Tool & Die Steels; Graphitic Tool Steels; and Hollow Die Steels. Applications for which their customers have used their steels. Dies, Punches, Gauges, and Pieces made from Dies using Milne Steels. Street

MODERN INDUSTRIAL ENGINEERING CO., No.

1102
14230 Berwood Ave., Detroit, Mich.
Personnel: E. M. Stay; and W. H. Bibbens.
New Products, Modern Burr Master Hyphoid Tooth
Tapping Machine—Rear Axic R ng Gears, Automo-

Pro ucts: Modern Burr Master Gear Burring and Chamfering Machine which burrs and chamfers, Fly-wheel R.ng Gear teeth at the rate of 150 per burr MDDERN MACHINE SHOP (Gardner Publications, 1°c) No. 651

Ohio

MODERNAIR CORP. No. 412
100 Preda St. San Leandro. Calif.
New Products: Air operated collect holding fixture;
its compact size permits multiple installations on
production indexing tables or where previously rapid
positioning of small parts was impossible. Model
uses a standard shop collets up to ½ capacity; uses a standard shop collets up to ½ capacity, design permits handling of long pieces tirrough the entire fixture without interference to expacity. Products. Air and hydraulic cylinders, valves and special control devices.

pecial control devices.

A. MONDIALE, No. 1030

Vilvorde, Belgium

MORE PRODUCTS CO., No. 824
902 E. Lycoming St., Philadelphia 24, Pa

Personnel H. C. Webster, J. E. Gambrill, E. D.
Bachand, R. H. Owens, C. H. T. ompson, and L. E.

Bachand; R. H. Owens; C. R. T. ompson, and L. E. Henryson.

ew Products: Automatic Gauges. Moore Precision Relay, Moore Booster Relay, Pneumatic Comparator Gage; the pneumatic measuring signal is brought to a Moore Precision Relay, which amplifies the input signal 1:25, and operates an air-electric switch in the sorting mechanism. The sharp cut-off action of these relays will be demonstrated by sorting parts 0.0001

Products: Air Gages for measuring inside and outside

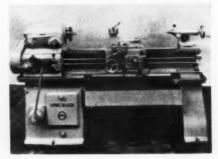
diameter, combination 1.d.-o.d. thickness.

MOREY MACHINERY CO., INC., No. 1250
410 Broome St., New York 13, N. Y.

Personnel: S. M., Morey: Leonard Morey: Wm., J.

Viking 13" Engine Lathe

Morey Machinery Company



KUTMORE ADJUSTABLE MILLS



DESIGNED TO . INCREASE PRODUCTION

- ANY COMBINATION OF . . . TURNING . . . TAPERING . . . FACING . . . CHAM-FERING . . . TREPANNING IN ONE PASS.
- EXCLUSIVE MICROMETER ADJUSTMENT FEATURE FOR RAPID SET-UP.
- IMMEDIATE DELIVERY FROM STOCK -1/32" to 2" CUTTING CAPACITIES.

WRITE FOR CATALOGUE NO. 20D.

OUR ENGINEERING DEPARTMENT IS AT YOUR DISPOSAL ON YOUR HOLLOW MILL **PROBLEMS**

CARL WIRTH & SON, INC. 1625 CLINTON AVE. NO ROCHESTER

PROSSER CARBIDE TOOL GRINDERS SAVE TIME — SAVE MONEY!

Prosser grinders are outstanding for speed, accuracy. thrift and are available in a wide range. Famous Prosser indexing device permits instant, accurate prosser indexing device permits instant, accurate angle setting that "stays put". Easy adjustment permits virtually 100% use of wheels. For grinding carbide, high speed steel, stellite and other modern tools, with any combination of diamond, silicon carbide or aluminum oxide wheels. Wet or dry models. Designed by Prosser - originator of cemented carbide

for American industry — these efficient grinders are rug-gedly constructed to serve you dependably for years.

PROMPT DELIVERY. Send for catalog of floor and bench models, chip breaker, drill-grinding and other attachments.

DEALERSHIPS AVAILABLE.

Model EE for wer ! or dry grinding



THOMAS PROSSER & SON NEW YORK

Peters; A. R. Grillo; Leonard Rodier; plus many

Peters; A. R. Grillo; Leonard Rodier; plus many of the foreign manufacturers and their representatives such as Mosers. Pegard, Raskin, Leyds, Dr. Mueller, Mr. Marcel Gavage, representatives from Hahn & Kolb. Mondiale. Octo Hempel, etc.

New Products: Pegard Horizontal Boring mill and lattice. Milling Machinee manufactured by Jaspar, P. Hure Cederberg & Munk, S.A.B.C.A., Steinel, Radial Drills manufactured by Ajax, Fresses manufactured by Hahn & Kolb. Hartes, Lathes—Star, Kern, Mueller Simplex. Selectronic, tilmstrated; this 13° lathe is available with 30°, 40° and 60° center distances. It is provided with infinitely variable speed drive; all measurements are in inches and declinals, Yiking Saw machine manufactured by Hommel, Universal Irooworker manufactured by Wornser.

Fliers—manufactured by Hahn & Kolb, Multi-Purpose MORTON MACHINE WORKS, No. 1015

MORTON MACHINE WORKS, No. 1015 2422 Walcott St., Ferndale 20, Mich.

NATIONAL BROACH & MACHINE CO., No. 1022 5600 St. Jean Ave., Detroit 13, Mich.

NATIONAL MACHINE TOOL CO., No. 232

NATIONAL MACHINE TOOL CO., No. 232
1536 Clark St. Hacine, Wis.
Personnel: Robert C. Heinrich; Stanley Sheppard;
John C. Gertenbach; C. B. Teeter; Adam Knuth;
G. C. Davies; Morrice Otto; Isaac T. Simmona.
New Products: "Grip-Master Fixture Lock, "Squarite"
Shaper Vise Attachment.
Products: "Grip-Master Drill Press Vises: "GripMaster Fixture Locks; "Squarite" Shaper Vise Attachment; Handy Drill Press Vise; "Handnib"
Shears, nibblers, punches and rod cutters, bench type,
band operated. hand operated.

NATIONAL TOOL CO., No. 1815 11250 Madison Ave., Cleveland 2, Ohio

NELCO TOOL CO., INC., No. 410

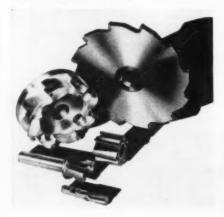
Manchester, Conn.

Products: Complete line of carbide-tipped cutting tools, including Nelco tools production engineered to parti-cular applications. These include carbide Tri-Helix tooth design which causes chips to fold during cutting, thus lessening the chances of the carbide tip breaking down at the center. Also, primary and secondary grinds on carbide tipped end mills, a feature said to cut down on chip clogging, permitting cooler cutting and increased tool life.

NEW HERMES, INC., No. 239
13 University Place, Now York 3, N. Y.
Personnel: W. Kamin; G. Gruettner; N. Schimmel;
M. Kaufman.

Carbide Tipped Cutting Tools

The Nelco Tool Company



New Products: Model 1-8 Engravograph Portable ma-chine which engraves panels, etc., of any size. Products: Various size Engravographs, Bench and Por-

637 Northland Ave., Buffaio 11, N. Y.
Personnel: F. E. Munschauer, Jr.: F. A. Reed; L. L.
Hock; F. L. Kelsey; R. E. Harwood; W. M. Eearts.
New Products: Squaring Shears, Air Powered Bar
Folder, Air Operated.
Products: Squaring Shears, Elactrically

Squaring Shears, Electrically Operated; Shears, Foot Operated; Circle Shear; Slip Squaring Shears. Former; Multi-Drive Power Table; Flanger; Hand Tools,

NIGHOLS-MORRIS CORP., No. 1624
50 Church St., New York 7, N. Y.
Personnel: Hart Nichols: Robert E. Morris: Max J.
Bloch; Stan K. Bigelow.
Products: Standard Nichols Miller; Toolroom Nichols
Miller; Stemi-automatic Nichols Miller; Nichols Twin
Mill (illustrated), a double-spindle high-precision
machine suitable for light work where two surfaces
can be milled in a single pass; unit is provided
with two opposed independent geared milling heads,
powered by pan-cake type motors; each has 15
spindle speeds, from 55 to 2080 r.p.m.; Universal
Dividing Head; Nichols Vise, and other accessories.

NiCHOLSON FILE CO., No. 745
16 Acorn St., Providence, R. I.
Personnel: Paul J. Roddy; J. Clifford Berthiaume;
Robert J. Gibb; E. Blair LeFevre.
Products: Hand steel Files and Rasps (American Pattern & X., F. Swiss Pattern); Rotary Power Files
and Burrs; Milled curved tooth Files; and Special Purpose Files

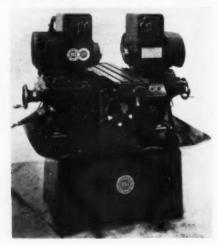
NILSSON GAGE CO., INC No. 533
Poughkeepsie. New York
Personnel: T. F. Luty; Charles Nilsson; John Nilsson;
Bob Riecks; M. B. Savage; Floyd Bearss; T. S.
Mellen; George Pierce; Dick Ensinger; Homer
Lacock; S. V. Luty; M. T. Starszyk; Art Guile; Les
White; Don R. Manecke; Roy Wallace; Carl Miller;
and Jim Course.

white, Don M. Manceae, any market, and Jim Couse.

New Products: Pistol-Grip Bore Gage, Nilco Dial Groove Location Gage, (Illustrated), used to check the location or depth of an internal groove; trigger application controls the gaging unit, collapsing lit

The Nichols Twin Mill

Nichols-Morris Corporation



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-

TOOL STAND

Prompt Delivery on Standard or Special Sizes

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METAL PRODUCTS CORPORATION
1724 SOUTH NORMAL AVE. • CHICAGO 16, ILL.

COOLEY HEAT TREATING FURNACES

For Tools and Small Parts

SHOWN HERE

THE COOLEY FLOOR MODEL for HARDENING AND TEMPERING



Max. Temp.	Sixes	Price
2000"	12" x 8" x 18" 12" x 8" x 24" 12" x 8" x 36"	\$985 to \$1265

All prices are less controls. Any standard controls available for automatic temperature control.

- With Cooley design, the door is virtually another wall, equally insulated with the others—entire hearth is usable.
- · Natural thermal convection.
- · Easily removable heating elements.

Brown and Wheeke Control Pyrometers carried in stock—available for all applications.

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COMPLETE CATALOG

"SHOP NOTES ON HEAT TREATING"

COOLEY

ELECTRIC MANUFACTURING CORP.
52 50 SHELBY INDIANAPOLIS, IND.

to enter the bore; a spring return holds the parts as if clamped when the trigger is released, and a vibrating movement sets the gaging pin in place for checking in the groove, giving a quick, accurate reading. Niloo Dial Groove Diameter Gage. Products: Dial Bore Gages, Crankshaft Dial Snap Gages, Small Dial Bore Gages, Pistol-Grip Bore Gage, Small Dial Bore Gages, Pistol-Grip Bore Dial Snap Gage, Bore Gages, Pitch Diameter Dial Snap Gage, Hour glass Gage, Pitch Diameter Dial Gages, Dial Snaps for Gear & Spline P.D., Groove Location Gage, Dial Groove Location Gage, Carbide Gages, Plog Gages, Ring Gages, Master Gages, Chrome Plated Gages, No. 124.

NORD INTERNATIONAL CORP., No. 124

Detrille, New Jersey
Personnel: Haroid Hedstrom.
New Products: Di-Profiler, Die Filing Machine, Nibblex Sheet Metal Cutter, Several Swedish small machine and hand tools.

C. A. NORGREN CO., No. 1931 3400 S. Elati St., Englewood, Colorado Personnel; J. M. Evans; D. G. Faust; Walter E.

New Products: Air Line Filter with automatic drain. Precision Regulator for low air flow (illustrated). Large Air Line Filter with transparent bowl for %" and 1" air lines. Aircraft boss fitting. air lines. Aircraft bose fittings and bose

Products: In addition to the above, one product of each type from the Norgren Pneumatic Equipment

Worcester 6, Mass.

O. K. TOOL CO., No. 1420 Shelton, Conn.

OAKITE PRODUCTS, INC., No. 132 22 Thames St., New York G. N. 132 Personnel: S. L. Perkins and F. J. McNally, Also in attendance will be metal specialists from Oakite technical field service organization.

from service organization.

Products: Specialized cleaning and related materials for metal-working plants, including materials designed for use in the following production operations: tank cleaning; machine cleaning; electro-

Dial Groove Location Gage

Nilsson Gage Co., Inc.



cleaning ponferrous metals: pickling, deoxidizing, bright dipping; pre-paint treatment in machines; pre-paint treatment in tanks; paint stripping; steam-detergent cleaning; barriel cleaning; burnishing; wash water treatment in paint spray booths; rust prevention; machining and grinding. Special attention will be directed to Oakite Compound No. 33—a new metal-cleaning material that combines three jobs in one by removing rust, removing eil and preparing metal for paint in a single operation—designed for application in tanks or by hand.

OHIO CRANKSHAFT CO., No. 1425 Cleveland, Ohio

O'NEIL-IRWIN MANUFACTURING CO., No. 1338 314 Eighth Ave., Lake City, Minn.

314 Eighth Ave., Lake City, Minn.

ORBAN, KURT CO., INC., No. 1600
205 E. 42nd St., New York 17, N. Y.

Persannel: R., Orban; H. W., Jones, Dr. F. Strasmann;
L. B. Kruse; G. R. Vonderahe; R. C. Zeile; A.
Nicholu: G. Marshall; S. Disque; R. D. McClure;
O. Karoly; L. Rijnch; C. Mather; and R. Holzherr.
New Products: Reinecker Surface Grinder,
Prodeuts: Heyligenstaedt, Facing Lathe; Reinecker
Surface Grinder; Reinecker Relleving Lathe; Hurth
Vertical Miller and Jig Borer; Cawl Spiral-Twist
Drill Grinder, Forst Broach; Forst Slot Miller
and Key Seater; Klopp Mechanical, Hydraulic and
Traversing Shapers: Magdeburg Lathe; Scheu Turret Lathe; Trebel Balancing Machine; May Chucks;
Hestika Hand Feed Turret Lathe; Trebel Dynamic
Balancing Machine Balancing Machine.

ORTMAN-MILLER MACHINE CO., INC., No. 2017

Hammond, Ind. Personnel: J. C. Miller; Chas. Gilmore; D. Y. Rice; H. D. MacRae.

Products: Air-Hydraulic Boosters, Air an aulic Flow Control Valves, Help-Air Air and Hydraulic

Products: reducts: Air. Hydraulic, Water Cylinders, Air-Hydraulic Feeds, Adjustable Stroke Cylinders, etc.

OSBORN MANUFACTURING CO., No. 1838 Cleveland, Ohio

O'VEE SPRING GAUGE CO., No. 734 Los Angeles, Calif.

Precision Pressure Regulator

C. A. Norgren Company





for
PRECISION . . .
the Johansson
Vertical
Milling Machine



Engineered for accuracy, flexibility, wide range of operation, the Johansson Vertical Milling Machine incorporates design and quality features you haven't found before in a machine of its size and price.

Precision ground feed screws, mounted in preloaded ball bearings. Extra large dials—3.4" in diameter — graduated in 100 increments. Precision hand-scraped ways. Micrometer depth stop graduated in thousandths of an inch. Positive quill lock. Quality workmanship throughout.

When you're buying a mill, ask your machine tool dealer about the Johansson.

SPECIFICATIONS

Spindle speeds, 180 to 3250 RPM. 12 HP motor. Quill travel, 2-½". No. 7 B&S or No. 2 Morse taper in spindle. Table, 6" x 18"—longitudinal feed, 12". Table, 6" x 24"—longitudinal feed, 16". Cross feed, 5". Vertical feed of knee, 12". Maximum distance spindle to table, 12".





PANGBORN CORP., No. 1322 Hagerstown, Md

PARKER RUST PROOF CO., No. 247 Detroit, Mich.

PARKWOOD LAMINATES, INC., No. 238

24 Water St., Wakefield, Mass. Personnel: Lawrence M. Harris; Paul B. Leverette; and John P. Queeney.

ew Products: Hi-Den—a series of laminates made

with birch veneer and paper base for forming tools and dies, jigs. fixtures, templates, and bench tops.

PENTON PUBLISHING CO., No. 546
Penton Bldg., Cleveland 13, Ohio

PERFEX GAGE & TOOL CO., No. 810 Mount Clemens, Mich.

PERRISH STEEL PRODUCTS, INC., No. 1034 Los Angeles. Calif.

PINES ENGINEERING CO., INC., No. 301
601 Wainut St., Aurora, Ill.
Personnel: B. F. Bower; J. E. Hawking: W.
Osterland; Glen Hamlin; E. C. Fitzpatrick; H.
Munro; Geo. Beckwell; K. F. Weith; and G. H. S. Behrend

New Products: Improved Pines size % aircraft bender. Products: Aircraft type tube bending machine; Series 600 Tube and Rod End Finishing Machine.

PIONEER PUMP & MFG. CO., No. 1528
19679 John B. St., Detroit 3, Mich.
Personnel: A. M. Sargent; Clyde Mooney; J. Raiph
Griffith; W. H. Frost; J. J. Grum; K. Martens;
J. A. Bruat; and C. Gray.
New Products: Warm water circulating heat Radiation
Plune.

Funp.
Products: A complete and diversified line of "Pioneer" impeller type and "Rollway" postitive-displacement-type pumps for circulating ecolants, lubricants and abrasive liquids for general machine tool and industrial use. Models shown will be representative of over 400 styles, types and variables.
PIONEER TOOL & ENGINEERING CO., No. 547
3914 W. Shakespeare St., Chicago, Ill.
Persennel: A. S. Kepen; R. P. Kepen; W. R. Shrode; C. W. Hoffman; Susan Stelmack; Geo, Powlick; and R. P. Klein,

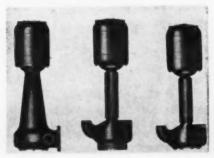
C. W. Hoffman, Science of the Company of the Compan

PIVOT PUNCH & DIE CORP., No. 343

North Tonawanda, N. Y.
Products: Pivot Punches offered in four series, First
line punches are high speed steel, straight-ground
parallel to the axis of the punch for easier stripping
and long life; second line punches are h.s., straight
ground parallel to the axis without the whipslesve;
third line punches are h.s., cylindrically ground,
for non-critical applications or low roduction tooling;
fourth line punches are carbon steel alloy, cylindrifourth line punches are carbon steel alloy, cylindrifourth line punches are carbon steel alloy, cylindri cally ground.

Positive Displacement Coolant Pumps

Pioneer Pump & Mfg. Co.



PORTER PRECISION PRODUCTS, No. 1830

P.O. Box 99, Cincinnati 31, Obio Persannel: W. G. Forter: and Eugene E. Ader. New Products: Porter Drill Fixture Products: Punches, round squares, oblong, and special shapes and sizes. Die Buttons; Retainers.

PRATT & WHITNEY DIVISION, NILES-BEMENT POND CO., No. 512 West Hartford, Conn.

PRECISE PRODUCTS CO., No. 1005

PRECISE PRODUCTS CO., No. 1003
1331 Clark St., Hacine Wis.
Personnel: Rob. Schumann; H. W. Schumann; K.
Christopherson; Y. Kassbian; Harold Martin; Fred
Roberts; and Wm. Sminkey.

Christopherson; Y. Kastbian; Harold Martin; Fred Roberts; and Win. Sminkey.
Preducts: Precise Super 40 and Super 50 Grinder-Millers arranged in special small machine set-ups doing internal grinding and internal tapper grinding to tolerances as close as .0001°, Grinder-Millers mounted in capital machine tools such as milling machines, lathes and drill presses to do grinding and tungsten carbide milling. Grinder-Millers operate at speeds as high as 45.000 r.p.m., developing up to a full ½ h.p. at the quills.

PRECISION DETROIT CO., No. 1713

PRECISION DIAMOND TOOL CO., No. 313

102 S. Grove Ave., Elgin, Ill. Personnel: Jan Taeyaerts; John J. Byant; Neil Bolier;

New Products: Diamond tools set in new steel alloy matrix.

Products: Diamond tools and diamond grinding wheels

of all kinds. PROCUNIER SAFETY CHUCK CO., No. 336

PROCUNIER SAFETY CHUCK CO., No. 336

18 S. Clinton St., Chicago 8, Ill.

New Products: "Tap King" heavy duty tapping head
(illustrated) possessing the sensitivity to tap or
externally thread a range of sizes from %" to 1½".

Features include an exclusive 17-tooth spline drive
from the clutch to the tap holding spindle; smaller,
lighter Tru-Grip tap holder; powerful sensitive frietion clutch, etc.

Products: Universal font-operated temping and these

from cluten, etc. Universal foot-operated tapping and thread-ing machines; "E" series high speed tapping heads; accessories for external threading, stud-setting, etc. Also style "H" Quick Change Chucks and Collets; Style "C" friction tap holders.

PRODUCTION MACHINE CO., No. 2008

PRODUCTION MACHINE CO., No. 2008
Greenfield, Mass,
Personnel: R. A. Cole; R. B., Robinson; C. F., Pickhardt; P. H., West; F. E., Penell; R. W., Schwartz;
and M. H., Barber,
Products: Type 914 Centerless Grinding and Finishing
Machine using abrasive belts, for grinding to close
tolerances bars, tubes, and other cylindrical work.
Type 484 Duplax Centerless Finishing Machine with
micrometer feed adjustments. Contour Grinding and
Finishing Machine, using abrasive or felt belts for
finishing irregular shapes by the offhand method.

Super 40 Grinder Miller

Precise Products Co.







THEY GRIND—NOT JUST RUB!

The RPM's stay up while grinding ... not only when the grinder runs idle.

It is an established fact that surface speeds must stay up to approximately a mile a minute if you want to grind ... not just rub. Every mechanic knows this, but an inexperienced buyer may order tools that maintain proper grinding speeds only when running idle. The speed of Kipp air grinders drops but slightly when put to work. That means better work . . . longer wheel life.

MADISON-KIPP CORP.

207 Waubesa St., Madison, Wis., U.S.A.

Write for KIPP Air Tool Catalog at 3006

THE PRODUCTO MACHINE CO., No. 1104

THE PRODUCTO MACHINE CO., No. 1104
Bridgeport, Conn.
Personnel; P. R. Marsilius; H. W. Hansen; Fred.
Howell; Neil Griest; C. W. Scheihing; J. B. Shaw,
New Products: Automatic 2° Surefeed, for stamping
presses; New design Producto Die Set,
Products Ring Punches and Dies; Producto Universal
Hand Tapping Machine; Producto Tool Room Vises,
PROGRESSIVE WELDER SALES CO., No. 437
Detroit 12, Mich.

PROGRESSIVE WELDER
Detroit 12, Mich.
PUTNAM TOOL CO., No. 439
2981 Charlevolx Ave., Detroit 7, Mich.

R AND L TOOLS No. 408
1825 Bristol St., Philadelphia, Pa.
Personnel: C. Emerson Poorman; and Robert L. Porter.
Products: R and L Turning Tools; R and L Tap and
Die Holders; R and L Universal Tool Posts; R and
L Knurling Tools; R and L Carbide and Roller
Backrests; R and L Floating Drill Holders; R and L
Backrests; R and L Floating Drill Holders; R and L
Backrests; R and L Floating Drill Holders; R L Knuring 10018; R and L Backrests; R and L Backrest Holder for Turret; R and L Revolving Stock Stops; R and L Cut Off Blade Holders; R and L Releasing Acorn Die Holder.

RACINE TOOL & MACHINE CO., No. 432
1754 State St., Bacine, Wis.

RAHN GRANITE SURFACE PLATE CO., No. 603

Dayton, Ohio
THE READY TOOL CO., No. 1017
550 Iranistan Ave., Bridgeport 5, Conn.
Persannel: Carl B. Christensen; Kenneth H. Lockwood;
Gust Westburg; Nelson R. Church; E. M. Benson;
E. S. Weidle; John S. Wright; M. L. Levis; Austin
Ford Logan; Edward Hassig; John Cochran; Steven
Brant; Ray Stoeling; Horace White; San Gleaves,
New Products: Anti-Friction Center for use with
lathe chucks for uncentered work—Buil head type
live center with replaceable head for various diameters.

roducts: Anti-Friction Centers, High Speed and Carbide Centers, a complete line of Grinder Dogs, Tool Holders, and other machine tool accessories.

REPUBLIC GAGE CO., No. 519
2228 Fenkell Ave., Detroit 21, Mich.
Products: Standard thread and plain gages to indicate
the variety of work which the company can offer.
Emphasis placed on such precision features as convoluting and chip grooving of thread plug gages.

Heavy Duty Tapping Attachment

Procunier Safety Chuck Co.



major diameter relief of thread ring gages; accuracy and finish of plain cylindrical plug and ring gages, accuracy etc. Republic "V-nide." "Carbide," "Norbide" and "Titan" gages will be included in the display.

and finish of plain cylindrical plug and ring gages, etc. Republic 'V-nide,' "Carbide,' "Norbide' and 'Titan' gages will be included in the display.

RICE PUMP & MACHINE CO., No. 1214
Grafton, Wis,
Personnel: R. D. Houghton; Erwin Losse,
New Products: Milwaukee Die Filer; Profile Grinder
(2 Models—Standard and High Speed).
J. A. RICHARDS CO., No. 421
907 N. Pitcher St., Kalamazoo, Mich.
Personnel: Paul A. Richards; and J. A. Richards Jr.
Products: Air Model Big Brother Multiform Benders;
Hand Operated Multiform Bender Cutter; Air Operated Multiform Bender with New Control Valve
Producting Hydraulic Like Action.

RIVETT LATHE & GRINDER, INC., No. 1027
Brighton 35, Boston, Mass.
Personnel: T. S. Ross; A. B. Hunt; T. B. Williams;
J. A. Marsh; and R. C. Talsey.
New Products: Sub-Plate mounted hydraulic valves.
Products: Air Cylinders: 1590 p.s.l. seven mounting
styles, nine bore sizes; Air Valves: 150 p.s.l., direct
control and remote operated in 20 models, in '4"
to 1" sizes; Hydraulic Cylinders: 1500 p.s.l., seven mounting
styles, ten bore sizes. Standard rod. 2:1
over-size rod; Hydraulic Valves: 1500 p.s.l., direct
control and remote operated in 128 models, in '4"
to 1% sizes; Power Units: 4 g.p.m. to 40 g.p.m.
at 1000 p.s.l.

ROSS OPERATING VALVE CO., No. 2026

at 1990 p.s.l.
ROSS OPERATING VALVE CO., No. 2026
120 E. Golden Gage Ave., Detroit 3, Mich.
H. B. ROUSE & CO., No. 1930
2214 N. Wayne Ave., Chicago 4, Ill.
Personnel: Harry W. Knoll; Frank J. Stephan; George

roducts: Rouse Hand Milling Machine. Companion line of Fixture Set-ups for the Rouse Hand Milling Machine which can also be used on other equipment

AS Well.

ROYAL OAK TOOL & MACHINE CO., No. 1101
(D-S Grinder Division)

621 E Fourth St., Royal Oak, Mich.

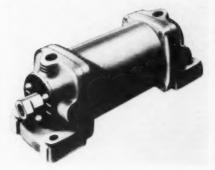
ozi E. Fourth St., Royal Oak, Mich.
Products: Radial Relief Grinder, producing a superior
grind that permits cleaner, faster cutting while obtaining a greater number of cuts per grind and
longer tool life. Manually operated and motor driven
makely will be before.

RYERSON & SON, INC., JOSEPH T., No. 147 Chicago 80, Ill.

Ryerson metallurgists and practical steel men will consult with steel users on problems of application, selection, and processing of alloy steels, tool steels, Patalless steels, and tubular products. Technical men will discuss and answer questions pertaining to the treatment and use of interim alloy steels in place of the saandard analyses, straight chromium statuless as an alternate for 18-8 chrome-nickel stainless, welded tubing as an alternate for seamless, machimability of bar steels and how to get greater production, and other steel problems. Ryerson metallurgists and practical steel men will

Hydraulic Cylinder Without Tie Rods

Rivett Lathe & Grinder, Inc.



HYBCO TAP GRINDER



MODEL 1100

CHAMFER Shorpening







GUH POINT Sharpening



 See us at BOOTH 1709 A.S.T.E. **EXPOSITION, Chicago, Illinois**

HENRY P. BOGGIS & CO.

710 East 163rd Street Cleveland 10, Ohio



Errington specializes in the manufacture of high speed multiple drilling and tapping attachments. The name Errington is your assurance of top-quality products . . . your assurance of the finest and most modern tools to produce first-grade workmanship at minimum operating costs.

QUICK-CHANGE

Tool-Holders to Drill, Tap and Set Studs, etc., without moving work, or stopping or reversing machine. adjustment in each tep-holder, if required.

POSITIVE

For through holes where work is drilled and then re-handled and tapped.

> BALL BEARING CONE-DRIVE

Designed for Ball Bearing High Speed Drill Press.

These Tappers may also be adapted for button or acorn die threading.

Write for Complete Information

ERRINGTON Mechanical Laboratory, Inc. Established 1891 Plant STATEN ISLAND 4. NEW YORK

SEE US AT BOOTH 212



Polygon Universal Cylindrical Grinder

S & S Machinery Company

8 & S MACHINERY CO., No. 1050

140-53rd St., Brooklyn 32, N. Y.

Personnel: Simon Srybnik; S. L. Allen; A. J.
Schirmer, J. J. Srybnik; S. L. Allen; A. J.
Schirmer, J. J. Srybnik; L. D. Srybnik; S. Simon;
Leon Waller; Martin Capian.

New Producti: No. 2 Induma Universal Millera—
Gluntina & Zocca Surface Grinders—No. 3 Mascrati
Vertical Millera—Tovagileri, Pontiggia, Morando
Lathea — Polygon Universal Cylindrical Grinder
(Illustrated)—Caser & Novisa Radial Drilla—Manurbin Turret Type Automatic Screw Machines—
Berardi Up-Right Drill—No. 3 Giuatina Horizontal
Millera—Minganti Turret Lathes No. 4, 1 A.P.
and 2 A.L.—3" & 4" Horizontal Boring Milla
Products: Italian and Swiss made tools including
Plain, Universal & Vertical No. 2-3-4 Milling Machines—Single Spindle ½", 25", Capacity Automatic
Turret Type Screw Machines 3'.4'-5' and 6' Radial
Drilla—24" and 30" Head Drive Drill Presses—
Universal Cylindrical Grinders for Elliptical. Triangular & Hexagonal Grinding—Ram & Saddle Type
Turret Lathes—12" to 60"x 6' to 60' Engine Lathes,
Quick Change, Geared Head—3" & 4" Horizontal
Boring Mills. Boring Mills.

SALES SERVICE MACHINE TOOL CO., No. 1942 2357 University Ave., St. Paul 4, Minn

SALVO TOOL & ENGINEERING CO., No. 352

Roseville, Mich.
Personnel: Leo Bedker; Fred Alexander; J. Burnett;

LeMaster New Products: Salvo oil grooving and thread rolling attachments which mount on the cross slide and pass over the center line of the work piece, insuring an accurate thread or oil groove without chatter or tool marks. Drills, reamers, taps, etc. may be used in the tool slide position while the thread is being

rolled.

roducts: Salvo Thread Rolling Attachments built for Automatic Screw Machines, Bullard Mult-aumatics, Turret Lathes and Engine Lathes. Products:

GEORGE SCHERR CO., INC., No. 601
200 Lafayette St., New York 12, N. Y.
New Products: "Comparitol" comparator gage; Jig
Borer reaming in .00005"; indicating bore gages;
indicating straddle gages for large diameters; indicating snap gages; "Perflektometer" for direct internal masurements; Ultra-Project-ometer reading in
.000010"; Universal measuring microscope with 8"
x 40" range; Leitz contour measuring projector, No.
PP-II; Universal optical bevel protractor; "Durimet"
micro-bardness tester; "Forster" surface finish tester;
optical gear tooth vernier; Scherr 5" spur gear
tester.

Products: Precision instruments for linear, thread, and angular measurements: Projectors for profile and form checking; microscopes and testers for finish control; Gear testers and miscellaneous small inspection tools.

SCHRADER'S SON DIV., Nes. 433 and 435 470 Vanderbilt Ave., Brooklyn 17, N. Y.

Personnel: F. L. Engstrom; A. S. Jorgensen; R. E. Jorgensen; J. J. Meister; F. P. Meister; E. P. Riciley

New Products: Air Operated Ferrule Machine; Flow

New Products: Air Operated Ferrule Machine; Flow Control Valves, Products: Air Cylinders, Air Ejection Sets, Airline Couplings, Blow Guns, Quick Acting Air Couplers, Oil Resistant Air Hose, Pneumatic Machine Controls, Air Hose Reels, Hydraulic Pressure Gauges, Air Control Valves, Air Flow Control Valves, Air Flow Control Valves, Air Check Valves.

Pilot Valves, Air Check Valves.

SCULLY-JONES and CO.. Nes. 1511 and 1517
1901 S. Rockwell St., Chicago S. Ill.

Personnel: J. A. Scully: H. D. Long; J. D. Lockrem;
Harry Conn: Bernard Better: John Lehde: John
Brown; W. Skiba; L. Reid; K. Klare; J. Sklenar.

New Preducts: "Roll-Lock" Mandreis. Arbors and
Chucks to be featured. Also—Drill Stops.

Products: "Roll-Lock" Chucking Tools: Drill Stops;

Floating Hoiders; Recessing Tools; Quick-Lock
Adapters for multiple spindles; Heavy Duty Tap
Holders; Close Center Tap Drivers; Tension and
Compression Tap Holders for multiple spindles.

SEIBERT A SONS. INC. N. 440

SEIBERT & SONS, INC., N. 440
215 Taylor St., East Peorla, Ill.
Personnel: O. B. Selbert; Warren Selbert; Glenn
Selbert; Beulah V. Selbert; W. T. Price; and O. M. Merrick

Metrick: Morse Taper Adapters; Slip Spindles As-semblies; Bracket Spindle Assemblies; Spindle Arms; Universal Joints; Lower Joint Assemblies; Upper Joint Assemblies; Pinion Drive Shafts.

THE SENTRY CO., No. 1930

THE SENTRY CO., No. 1930
Foxboro, Mass.
Personnel: Gordon Wheeler: B. B. Crocker; C. W. Rudolph: and G. A. Newholm.
Products: Model Y high speed steel hardening furnace in operation, demonstrating the effectiveness of the Diamond Block Method of atmospheric control for the hardening of the molybdenum types of high speed steels. Also full information on Sentry line of electric metal heat treating furnaces.

SERVICE DIAMOND TOOL CO., No. 719
2505 Hurdette Ave., Ferndale 20, Mich.
Persennel: Michael Antonik; Louis Small; Al Walstrom: Robert Slaughter; Robert Hazelton; George
Pennington and Morris Lipshav.

Pennington and Morris Lapsnaw. New Products: Several models and types of Service Diamond Hardness Testers for standard and super-ficial Reckwell Testing will be shown as well as a complete assortment of accessories.

"Roll-Lock" Chucking Tool

Scully-Jones & Company





Made of finest high speed steel. Available in all standard sises. Always in stock for immediate delivery. Specials made to your specifications.





High speed, Hight hand V_a shank. Diameter from V_4 to $1V_2$. Standard sizes in stock for immediate delivery. Complete set

41 sizes—available
in sturdy, hardwood
box. Saves time and money, because you always have the size you need.



CENTER REAMERS

High speed steel. Reamers from 1/4" to 1" regularly furnished with 60", 82", 30" included angle. Specials made to your specifications

LATHE MANDRELS



Precision made of tool steel, hardened and accurately ground. Tapered .0005" to the inch. Mandrels from 8/16" to 1" are .0005" undersize at small end, from 1\u00e4" to 3".001" undersize. Immediate delivery.

Write for Literature Illustrated literature and prices on all KEO Products mailed on request

CUT

19326 Woodward - Detroit 3 Mich

Praducts: The Service Diamond Hardness Tester with the precision of a laboratory instrument, and the ruggedness of a production tool. Service Diamond manufactures testing machines, penetrators, and testing machines, penetrators, blocks. Cross checking during producmanufactures testing machines, peneurators, and standard test blocks. Cross checking during production by their precision standardizing laboratory insures accuracy of all Service hardness testing equipment. The Kentron microhardness machine for Vickers and Koop tests will also be shown. The Standard, Superficial and Microhardness testers will permit complete testing loads from 1 gram to 150,000 grams.

SERVICE MACHINE CO., No. 1804 7627 S. Ashland Ave., Chicago 20, Ill.

SEVERANCE TOOL INDUSTRIES, INC., No. 414

Saginaw, Mich. Personnel: Robert S. Cave; Robert S. Severance; Dexter

A. Hagaman, Norman C. Schuster.

Products: Severance line of cutting tools, including midget mills, chatterless countersinks. Display of technique employed by master craftsmen in the manufacture of Severance products.

THE SHEFFIELD CORP., No. 710

712 Springfield St., Dayton I. Ohio
721 Springfield St., Dayton I. Ohio
Personnei: Louis Polk; John Bernard; Albert Polk;
W. I. Wilt; Louis Mahlmeister; Fred Hummell;
Louis Schulze; Harry Kiefaber; Wayne McKelvey;
Howard Vogel: Bob Ruppert; Herb Riesinger; Jack
Welch; Donald Benbow; Ed Hakanson; and S.
Sabaliti. Sakaitic

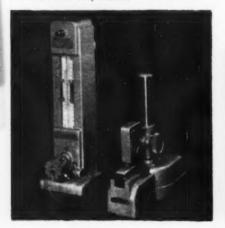
Products: A new Leadchek; Precisionaire

Products: A new Leadchek; Precisionaire Inspection instruments for jet blades; A complete line of gages for checking instrument bearings; A floor type Internal Measuring Instrument; A new Horizontal External Comparator; A new cylinder black checking machine; A new automatic gage for checking and aggregating ordinance components for measuring thickness of precision gage blocks by air; there is no gag point contact; only pressure exerted on the block is that of a stream of air against the upper and lower surfaces. Precision measuring instruments, including Visual Gages, Precisionaires, Toolroom Gages, Murchey collapsible dieheads and taps. Crushtrue grinding equipment. Precision Gages.

SHELDON MACHINE CO., INC., No. 1408
4242 N. Knox Ave., Chicago 41, Ill.
Personnel: Lyman H. Bellows; Howard B. Carroll;
B. J. Moshach, L. E. Happonen; Vernon Larson;
O. J. Onken; Earl Waddell; E. E. Riddle.

Precisionaire Gage Block Comparator

The Sheffield Corporation



Products: Two T856B lather, Model 3000PQ Milling machine, 80008 Shaper.

SHELL OIL CO., No. 112
New York, N. Y.

SIMONDS ABRASIVE CO., No. 1314 hiladelphia.

Pa. SIMONDS SAW & STEEL CO., No. 1314 Fitchburg. Mass.

Fitchburg, Mass.

81ZE COMTROL CO., No. 704

2500 W. Washington Blod., Chicago 12, III.

Personnel: W. E. Carroll; Frank Hlavek; Bill

Schraeder; Chas. Loseer; P. J. Sommer; T. J. Owen;

E. E. Olds; Larry Hammond; R. L. Gulmont; T. C.

Froeberg: Jay Korest; J. W. Peterson; H. C.

Collins; Ernest laberg: Frank Jodon; Arthur Stringer;

Jos. Batlle; Arthur Vincent; and K. W. Howard.

New Products: Tesa Internal Micrometers; Censor

Commarators and Sorting Machines.

New Products: Tesa Internal Micrometers; Censor Comparators and Sorting Machines.
Products. Reversible Plain and Thread Plug Gages in Steel-Chrome-Carbide-Norbide, Ring Gages, Gar and Thread Wires. Special Gages, Gage Sets, Snap Gages. Taperlock Plugs.

SOCONY VACUUM 01L CO., No. 233

New York,

SOUTH BEND LATHE WORKS No. 1216
South Bend, Ind.
Products: South Bend 16" swing toolroom lathe with
ample capacity for tool and die work, plus the precision for exacting operations on small parts. Regular
equipment includes hand wheel type draw in collet

equipment includes hand wheel type draw-in collet attachment, telescopic taper attachment, micrometer carriage stop, and thread dial indicator. When equipped with a 3-phase, 2-speed motor, the lathe has twelve spindle speeds ranging from 20 to 945 r.p.m. Also to be shown: other sizes of South Bend Lathes, the ?* Shaper and the 14" Drill Press, plus attachment and accessories.

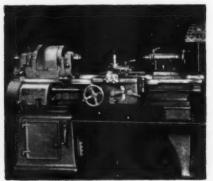
SPECIAL ENGINEERING SERVICE, INC., No. 1142 Detroit, Mich.

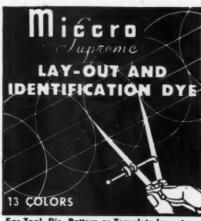
THE STANDARD ELECTRICAL TOOL CO., No. 1727

THE STANDARD ELECTRICAL TOOL CO., No. 1727
2486 River Rd., Cincinnati 4. Ohio
Personnel: W. A. Ferguson; J. J. Falls; R. A. Huhn;
Irwin Seitz; J. J. Klopp; R. C. Dalton; P. P.
Wagener; F. W. Jenike; A. E. Danow.
Producb: 10° and 14° Twin-Wheel Tool Grinders
(Illustrated), designed for grinding carbide, Stellite
and high speed steel tools. The degree-graduated
independent tilting tables are stationary, with table
supports integral with the splash pan and base.
Tables tilt 15° above and 30° below the horizontal.
Grinding spindles and coolant pump are v-belt motor
driven and fully enclosed. Also: Precision Internal
and External Grinders—Vertical Spindle Grinders
for mounting on Machine Tools—Single Wheel Tool
Grinder and Speed-Chucking Lathe.

16" Swing Toolroom Lathe

South Bend Lathe Works





For Tool, Die, Pattern or Template layout on metal . . . Quick identification of bar stock, sheet, strips or parts . . . Shows up in sharp relief—dries instantly . . . Write for sample and circular on company letterhead.

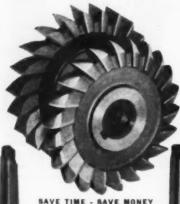
MICHIGAN CHROME & CHEMICAL COMPANY
6340 E. Jefferson Ave. - Detroit 7, Mich.







RUTLAND



SAVE TIME - SAVE MONEY SAVE TOOLS For rapid changeover of Tool setups

SPECIAL TOOLS FROM STANDARD TOOLS

All types of special reamers, cutters, end mills and drills can be made from standard catalog tools. We can make these specials to your blue prints quickly and economically from our large stock of standard cutting

Mail your specifications or blueprints today for immediate price and delivery.

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1617 E. McNICHOLS . DETROIT 3, MICH.

TW inbrook 3-6240



Twin-Wheel Tool Grinder

Standard Electric Tool Co.

STANDARD GAGE CO., INC., No. 532
Poughkeepsie, N. Y.
Persensel: Erik Aldeborgh; John Aldeborgh; H. A.
Babb; Milton T. Broucek; Noel de Cordova; John
E. Delaney; George E. Hanseiman; C. H. Jacobs.
New Preducts: No. 00 Dial Bore Gage, size-disc
type; checks bore diameters 250° through 375°.
Also new Dial Snap Gage for fast, accurate checking
diameter of crankshafts or similar parts.
Preducts: Indicating Gages, including Dial Bore Gages;
Dial Bore Gages; Dial Plug Gages; Dial Pin Gages;
Dial Depth Gages, Dial Indicators. Comparators.
Adjustable Limit Gages, including Adj. Limit Snap
Gages; Adjustable Limit Gages, including Adg. Limit Snap
Gages; Adjustable Plug Gages; Algos, Algos, Ring Gages;
Master Discs: Gagematic Discs; Keyway Gages
Taper Gages. Master Disci Taper Gages,

STANDARD PRESSED STEEL CO., Nos. 1535 and

Jenkintown, Pa.

Jenkintown, Pa.

Jenkintown, Pa.

Persannel: J. W. Friel; George A. Gade; Raymond N. Gruber; Walter Brown; Thomas Breen; Ford Manhart; Edward Mooney; William Harper; Francis Rinsella; Daniel Huigrave; Crawford Maxson; Clayton Graham; Bennet Jones; Harold Hafer; Aldred W. Scott; and Harry L. Smith.

Products: Unbrake line of socket-head cap screws and hollow set acrews; Flexioe line of locknuts; Hallowell line of steel shop equipment, including work and cabinet benches, platform trucks, drawers, tool stands and the new knock-down stool,

THE STAPLES TOOL CO., No. 639
2851 Massachusetts Ave., Cincinnati, Ohio
Personnel: Chas. M. Carr; Robt. Maurath; John Long;
Ed Galvin; Frank Burgan; Robt. Tilley.
New Preducts: Carbiet tipped replaceable expansion
reamers mounted on special wear resistant reamer

BATE.

Products: Carbide tipped Expansion Reamers; Carbide tipped Solid Reamers; Carbide tipped Core Drills; carbide tipped End Mills; and carbide tipped Spotfacers and Counterbores.

THE L. S. STARRETT CO., No. 833
Athol. Mass.
Products: Precision Measuring Tools and Instruments;
Dial Indicators; Precision Ground Die and Flat
Stock; Steel Tapes and Rules; Hacksaws, Bandsaws and Band Knives



PA-2 Ductility Testing Machine

Steel City Testing Machines

STEEL CITY TESTING MACHINES, INC., No. 611
8843 Livernois Ave., Detroit 4, Mich.
Personnel: Louis A. Welt; Wm. S. Sherertz; Chester
A. Kuns.
Products: Direct Reading Type Brinell Hardness Testing Machine for production testing; Hand operated
dead weight Brinell Tester for laboratory use; Portable Hardness Testing Hammer; Ductility Testing
Machine for testing drawing qualities of sheet me,al;
this machine, hydraulically operated, has capacities
up to ¾" material thickness. Direct Reading Proving
Ring.

Ring. STEELCRAFT TOOL CO., No. 1102

Detroit, Mich. STEEL PRODUCTS ENGINEERING CO., No. 1900

STEEL PRODUCTS ENGINEERING CO., No. 1900 Springfield, Ohlo Products: The Brehm Trie Die and sample trimmed shells; the die is used in a conventional punch press to trim the surplus stock from shells drawn from sheet materials. Stock thicknesses vary from .008° brass to 7/32° steel. Parts are completely trimmed in one operation.

THE STERLING GRINDING WHEEL DIVISION. OF THE CLEVELAND QUARRIES CO., No. 1839 Tiffin, Ohlo Personnel: A. E. Tulk; B. H. Lott. A. J. Schneider; H. E. Erf; W. F. Schlick; L. B. Bellamy; R. W. Lund; H. C. Holmes; E. E. Kass; John Andress; and R. J. Smith.

New Preducts: Sterling Vitrified Bonded Silicon Car-

H. E. Ert; W. F. Schlick; L. B. Bellany; R. W. Lund; H. C. Holmes; E. E. Kass; John Andreas; and R. J. Smith.

New Preducts: Sterling Vitrified Bonded Silicon Carbide Wheels for replacement of diamond wheels used for sharpening carbide cutting tools.

Preducts: Sterling Tool Room Wheels, Sterling Carbide Tool Wheels, Sterling Esymounts and Wheels.

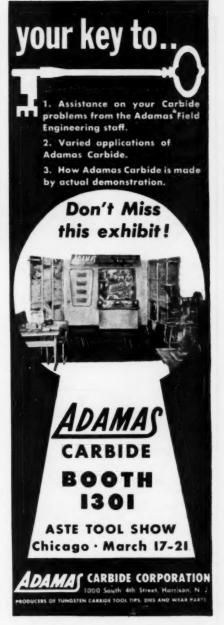
Sternounts and Wheels.

EDWIN B. STIMPSON CO., INC., No. 139

70 Frankiln Ave., Brooklyn 5, N. Y.

Persennel: Frankiln J. Rau; Frank G. Ascherl; Ralph E. Hector; William M. Colestock, Jr.

Products: Over 2000 different metal articles manufactured by the company, including Eyelets, Rivets, Stampings. Terminals, Arrows and Hands, Screw Machine Parts, Washers, Grommets and Washers, Ferrules, Posts and Screws, Hole Plugs. Snap Fasteners, and other miscellaneous metal articles. Also various eyelet attaching machines and rivet setting machines. setting machines.

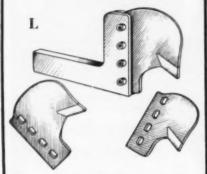


The Peer of All Cutoff Tools

Cuts from scratch to 13" in diameter.

Blades interchangeable and reversible —

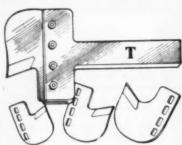
L" to T" etc.



No. 1 "L" Holder &x% with 3A Blades and Carbide. Complete-\$28.50

No. 2 "L" Holder %x11/4 with 7 Blades. Diameter. Complete—\$68.75

No. 3 "L" Holder 34x114 with 9 Blades. diameter. This is the rugged type. Complete—\$99.60



If "T" Holder Preferred—Add \$1.00 to any of above orders. Blades are the same. Extra Holders L No. 1—\$9.00; T No. 1—\$10.00; L No. 2—\$13.25; T No. 2—\$14.25; L No. 3—\$14.25: T No. 3—\$15.25. Prices F.O.B. Pomona, Calif.

Off-set holders 75c extra

MESSENGER TOOL CO.
629 N. RESERVOIR ST.
POMONA, CALIFORNIA



Demoor Engine Lathe, Model 821 Stokvis, Edera & Co.

Diozetto, David G Co.

STOKERUNIT CORP., No. 508

4548 W. Mitchell St., Milwaukee, Wis.
Personnel: L. J. Radermacher; P. O. Wernicke; J. A.
Elwood; R. P. Bleszk; L. Jones; J. Chovanec; E.
W. Greuel; J. Gralewicz; R. Karling; C. Boettcher;
J. Nelson; N. Orlaska; A. Bleszk; K. Buchmann;
A. Hailing; T. Weyher; R. Warzyn; E. Meżydłe;
C. Hill; A. Roeglin; J. Altmann; P. Stanton; and
F. Paus.

F. Paus.

Products: Due to the government's demands and the necessity of shipping machines immediately upon completion, the company is unable to exhibit its Simplex Precision Boring Machine in its entirety. The various sizes of Simplex self-contained, automatically lubricated Precision Boring Heads and other equipment will be exhibited.

STOKVIS, EDERA & CO., INC., No. 1028 21 E. 26th St., New York, N. Y. Personnel: John Stokvis and Eugene Edera Products: Demoor Engine Lathe, Model 821 (illus-

High Speed Cutting Machine

Stone Machinery Company



trated); has 19½ swing x 79" centers; Gilly Horizonal Boring and Milling Machine Model AFMF100 4" spindle, Table Model; Matheys Milling and Jig-4" spindle, Table Model; Matheys boring Machine.
TONE MACHINERY CO., No. 447

STONE

STONE MACHINERY CO., No. 447
Manitus, N. Y.
Products: Complete line of high speed cutting machinery, including several different machines using abrasive blades or semi-high speed steel cutting wheels for cutting ferrous and non-ferrous metals at the rate of four seconds per square incb.
STRONG, CARLISLE & HAMMOND CO., No. 844
1332 W. Third St., Cleveland 13, Ohio
Personnel: B. C. Douglas; S. C. Gunnett; G. E.
McCreery; R. N. Twitchell; R. W. Dicely; Dan
Dicely.

MCCress; h.

Dicely,

Products: Mac-It Screw Products, A complete line of
heat treated alloy steel screws including, but not
limited to, Socket Head Cap Screws, Hollow Set
Screws, Hollow Lock Screws, Square Head Set Screws,

A Tool Prost Screws,

Screws, Hollow Lock Screws, Square Head Set Screws, and Tool Post Screws.

D. A. STUART OIL CO., LTD., No. 1823
2727 S. Troy St., Chicago 23, III.

Products: Metal parts machined, ground and drawn with Stuart's oils. These parts will be representative of almost every branch of the metalworking industry including the latest in jet engine components and ordennes thems. ordnance items

ordnance items.
SUB ZERO PRODUCTS, MFG, DIV. DEEPFREEZE
DISTRIBUTING CORP., No. 337
3930 Reading Road. Cincinnati 29, Ohio
Personnel: Robt. J. Jacobson; R. S. Jamison; Robt.
Huff; and Ted Fredericks.
New Products; Model W-120, Sub Zero Industrial
Chilling Machine, for use in the stabilization of
steels, shrink fit assembly, longer tool life, etc.
Capacity five cubic feet; temperature maintained
-120° F.

-120° F.
Products: Model R-120 Sub Zero Chilling Machine, 10
Cu. Ft. Capacity; to maintain -120° F. and Model
W-120 described above.
SUNNEN PRODUCTS CO., Nos. 1724 and 1726
7910 Manchester Ave., St. Louis 17, Mo.
Personnel: 8. Sunnen; W. F. Boldt; Paul Fisher;
W. Spelser,
New Products: New Style Honing-dial equipped Honing
Machines in operation. These units indicate the

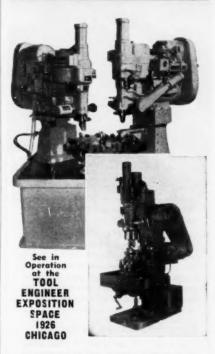
Machines in operation. These units indicate

Dial-Equipped Honing Machine

Sunnen Products Co.



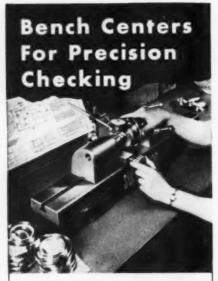
KAUFMAN TAPPING MACHINES



Kaufman specializes in Tapping Machinesevery machine precision-built to meet the requirements of individual production jobs. Designed with fully automatic cycle—single or multiple spindle heads-speed changes by selective gearing-and other most advanced features.

Write for complete information.

MANITOWOC, WISCONSIN



Simplify assembly, lower spoilage and get better production from this modern Sundstrand Bench Center. You'll check work between centers easier, faster and within limits of .0001" on this improved Sundstrand Bench Center.

"One-hand control" over all movable elements leaves the operator's other hand free to control rotation of the part being checked. Either headstock or tailstock can be unclamped, positioned and locked in place with a single hand operating the top lever. Investigate this bench center today.

Complete Range as Follows:

	6" x	18"	12" x 48"	24" x 48"
	6" x	36"	12" x 60"	24" x 60"
	12" ×	36"	12" x 72"	24" x 72"

FREE Additional Data



covering complete specifications and additional features is contained in this bulletin. Write for your copy Ask for data sheet 418.



SUNDSTRAND MACHINE TOOL CO. 2535 Eleventh Street, Rockford, III., U.S.A. amount of stock removal and the cutting action of the stone; they permit unskilled help to accomplish satisfactory work without expensive training. Also, Tenth-reading Honing gage for measuring internal diameters

Products: Internal Honing Machines, External Honing Tools, Cylinder Hones, Portable Honing Tools.

SUPER TOOL CO.. No. 1429
21650 Hoover Road, Detroit 13, Mich.
Products: Complete line of solid carbide and carbide tipped milling cutters, drills, reamers, etc. Complete line of drills, tipped and solid carbide in regular and fast spiral types.

SUPERHYDRAULIC CORP., No. 849

SUPERHYDRAULIC CORP., No. 549
Detroit, Mich.
New Products: Hydraulic Remote Control, a simplified device for positioning, controlling and duplicating movement at a distance; the unit has many applications in the product design field including machine tools. It features automatic compensation for contraction and expansion of the fluid media.

Products: Hydraulic Remote Control and Superdraulic High Pressure Pump capable of developing 60 h.p.

High Pressure Pump capable of developing 60 h.p.

at 5,000 p.s.t.

SUTTON TOOL CO., No. 420

Sturgis, Mich.

Personnel: Edw. J. Jividen; E. J. Shaheen; Fred Porst;
O. T. Sarber; Jay Guy; Van Belknap; and Roy
Warner.

ew Products: Levermatic and Handinatic Collet Chucks, Aircraft parts, Standard and Special Boring Bars and the General line of collets both specials and standard. New

SWEDISH GAGE COMPANY OF AMERICA No. 701 Detroit, Mich.

SYCOMON, No. 1030 c/o Amlintool, Inc. New York, N. Y.

THE TAFT-PEIRCE MANUFACTURING CO., Nos.

620 and 621 Woonsocket, R. 1.

Woonsocket, R. I. Products: Complete line of fixed gages, air gages, tool room equipment and magnetic chucks. Sample parts and photographs Illustrating the company's Contract Service activities. A feature of the thread gage diaplay will be a "Roto-Chek" power driven thread gage showing the case of operation of this speed inducting tool. Also featured will be several special air gage applications including an "sirelectric" device which will be fed continuously and will translate product dimension into flashing lights.

THE TEXAS CO., No. 246 New York, N. Y.

Unit Type Dust Collector Torit Manufacturing Co.



THOMAS FLEXIBLE COUPLING CO., No. 451

Warrett, Pa.
Warrett, P. J. Page; G. M. Page; M. T. Thomas;
R. G. Smith; Carl F. Gast; E. Hagenlocher; J. B.
R. G. Smith; Carl F. Gast; E. Hagenlocher; J. B.
Preducts: Flexible Couplings for Fower Transmission.

TOCCO DIVISION, OHIO CRANKSHAFT CO., No.

Cleveland, Ohio

THE TOMKINS JOHNSON CO., No. 1927

THE TOMKINS JOHNSON CO., No. 1927
Jackson, Mich.
Personnel: W. J. Donnely; W. J. Remund; J. F.
Gillett; A. Pauwels; G. B. Cranor; M. Hawley;
F. W. Weldon; C. H. Richardson; R. Charbonneau;
Wim. Maier; and (Mrs.) Dorothy Tracey,
New Products: Super Cushion Air Cylinder.
Products: "Rivitor" and "Clinchor" Air and Hydraulic
Cylinders. Die Sinking milling cutters, Remote
and speed control valves.

THE TOOL ENGINEER No. 500 Detroit, Mich.

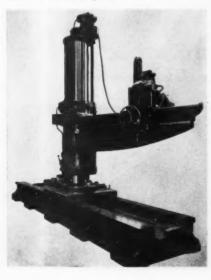
TORIT MANUFACTURING CO., No. 242
292 Walnut St., St. Paul 2, Minn.
Persennel: Edward J. Girk; Stanley Pollnow; E. A.
Davenport; B. J. Shields.
Products: Torit unit-type dust collectors for grinders,
polishing machines, etc. (both cloth filter and cyclone
separator styles). These units are available in a
number of different models, with capacities of
from 240 to 1750 c.f.m.

TRI-STATE MACHINERY CO., No. 1912
3041 W. Liberty Ave., Pittaburgh 16, Pa.
New Products: Radial Drill (Illustrated) built by
William Asquith, Ltd.; this unit features centralized controls, extreme rigidity to resist deflection
and, since both the head and arm are supported on
roller bearings, the machine offers exceptional ease
of operation; Also: new Tapping Chuck which provides the correct torque to drive any tap from ½"
to 1", yet will automatically slip when bottoming;
quick change adapters enable the operator to drill
or tap with the same unit.

TUBULAR MICROMETER CO., No. 707 St. James, Minn.

6' Asquith Radial Drill

Tri-State Machinery Co.





Meet sudden demands for high speed production by having every lathe equipped with the Allison Collet Chuck. Gives full spindle bore capacity to any lathe having 11/2"-8 thread spindles. Requires no keys, wrenches, reverse switching or stopping. Operator simply draws lever ball toward him to tighten collet; pushes it away from him to release. Mail the coupon for complete. illustrated description and prices.

2003 South A		rt .		
San Pedro, Cal	ifornia			
Please send co		e, prices	and r	name (
nearest supply	house.			
NAME				
ADDRESS				
CITY		STA	TB	



An invention in value means

Hundreds of thousands are in use in leading factories, machine shops and foundries. See your jobber or write direct for full details.

AIR-WAY PUMP & EQUIPMENT CO. 1054 N. Kilbourn Ave. Chicago 51, III.



Automatic Reversing Type Pump

Tuthill Pump Company

TUBULAR RIVET & STUD CO., No. 317

TURNER BROS., No. 1316

TURNER BROS., No. 1316
Ferndale, Mich. CO... No. 2029
TUTHILL PUMP CO... No. 2029
939 East 95th St., Chicago 19, 111,
Personnel: G. B. Tuthill; H. T. Kessler; W. J.
Wagner; J. D. Young; and R. H. Clark.
New Products: Model RF Automatic Reversing Type
Pump, illustrated; unit measures only 2½° o.d.
by 4½° long (maximum); it delivers a constant
flow from the same port, regardless of the direction
of shaft rotation, without the use of valves. It is
suitable for lubricating and hydraulic service in
connection with machine tools and attachments. Available in three sizes, in capacities up to 2 g.p.m.,
and pressure ranges to 200 p.s.i.,
Products: Rotary Pumps.

and pressure ranges to 200 p.s.l.,
Products: Rotary Pumps
UNION MANUFACTURING CO.. No. 1013
New Britain, Conn.
Personnel: W. F. Skillin; G. V. Murphy; Richard
Atkins; Wm. Badune; C. A. Bedford; G. VanWert;
and Nils Linde.
New Products: Allsteel Die Sets, T-Slotted Punch
Holder Die Sets, Semi-Steel and Steel Composite

Die Sets.

Products: General Line of Union Ultra-Precision Die

UNIVERSAL CYCLOPS CORP., No. 520

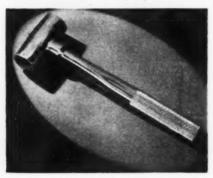
Bridgeville, Pa.
UNIVERTICAL MACHINE CO., No. 442
199 W. Pleasant St., Detroit 18, Mich,
Personnel: Charles T. Walker; Marion Walker; and

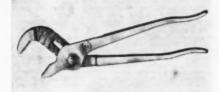
Al Waha.

Products: Univertical Gilding Metal Safe-T-Hammers, designed for use where it is necessary to strike a

Gilding Metal Safety Hammer

Univertical Machine Company





No. 507 Rib-Lock Pliers

Utica Drop Forge & Tool Co.

hard blow without injuring delicately machined surhard blow without injuring delicately machined surfaces; hammer head is made of a soft but tough homogeneous casting of copper or copper alloy which will flatten but not fracture or chip.

UTICA DROP FORGE & TOOL CORP., No. 221
2115 Whitesboro St., Utica 4, N. Y.
Personnel: Chas. Larocco; Willard Raifen; Robert Laggren; Nils Linde; Walter Linde.
New Products: Model 507-10 Rib Joint Plier, a tool designed for added strength; each rib shares the strength of the entire joint member.
Products: Pliers and Adjustable Wrenches.
THE V & O PRESS CO., DIV. OF EMHART MFG.
CO. No. 1331
Hudson, N. Y.

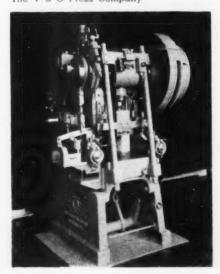
Hudson, N. Y.
Personnel: E. E. Legge; W. W. Schug; G. R. Kinney;
N. Van Deusen; R. A. Freeman; W. Lechowski;
and J. Griffin.

and J. Griffin.

New Products: Model 30T V & O High Speed Power Precision Press, equipped with high speed double roll feed and scrap cutter. This press is being offered for operating speeds up to 400 s.p.m., and features a long slide for accurate guiding for longer die life. Also: the V & O Feed-O-Matic, a punch press feeder attached to a No. 2 V & O standard inclinable type. type press.

High Speed Power Press

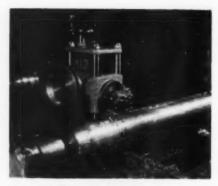
The V & O Press Company



CITIES SERVICE

Devoted to serving American Industry and the American Consumer with a complete line of the finest petroleum products.

VISIT US AT BOOTH 346



Versa-Mil Universal Head

Versa-Mil Company

VAPOR BLAST MFG. CO., Nos. 1210 and 1317 Milwaukee, Wis.

VANADIUM-ALLOYS STEEL CO., No. 536

VANADIUM-ALLOYS STEEL CO., No. 536
Latrobe, Pa.
Persanset: R. D. Bardes; T. B. Blackwood; Arthur
Brookfield; R. A. Cary; R. Burns George; J. P.
Gill; P. H. Heubel; H. G. Johnstin; R. L. Keller;
W. G. Lindner; C. A. Lundy; W. R. Mau; J.
Cleveland McKenna; J. B. Neff; G. A. Roberts;
R. C. Simpson; M. O. Smith; P. L. Swoger.
Preducts: Cutting tools and dies made of VanadiumAlloys Steel Company "First Quality" Tool Steel,
with actual records covering their performance in
service. These will include the new high-vanadium
"super" high speed steels such as Vasco Supreme.
Neatro and Van Cut as well as the company's standard types of tool and die steels. The exhibit will

Hydraulic Speed-Mill

Viking Industries



also feature a collection of awords many centuries old including an authenticated Damascus blade manufactured in the year 1232.

manufactured in the year 1232.

VERSA-MIL CO., No. 1942

30 Church St., New York 7, N. Y.

Persannel: David S. McCullough; Peter F. Crosby;

Ernest Welkert; Paul A. Blakely, Jr.

New Preducts: Versa-Mil Universal Head

Preducts: Versa-Mil the tool for precision milling,

drilling, boring and grinding, including basic

milling and boring units, accessories for high speed

cutting, internal and external grinding, tool and

cutter grinding, thread milling, gear cutting, and

indexing. indexing.

VERSON ALLSTEEL PRESS CO., No. 2031
1355 East 93rd Mt., Chicago, III.
Personnel: David C., Verson; John Verson; A. C.
Ortmann; Jack Novak; Walter C. Johnson; M. D.
Verson; Fred Zapf; Emmet J. O'Comnell; H. Allen
Pederson; Robert Hoeller; N. J. Kassnel; R. W.
Gardner, Jr.

Gardner, Jr.
New Products: Verson High Production stamping and
forging equipment, including both Presses and Tooling, will be shown graphically. Stampings and
forgings made by means of this tooling will be on

display in booth.

Preducts: A Verson Press and tool-up for cold extrusion can be seen in operation in the Detrex Corporation Booth No. 2035

Corporation Booth No. 2035
VIKING INDUSTRIES. No. 1208
220 Montague St., Rockford, III.
New Preducts: Viking Hydraulic Speed-Mill (Illustrated) for fast machining of small parts requiring close limits and fine finish; a rugged 2½" steel overarm provides extra rigidity to the cutter arbor. Infinite, variable spindle speeds are available. Single unit drive shaft operates with the coolant and hydraulic pumps. Also: Viking Surface Grinder which speeds precision work on small parts; also: small-sized Magnetic Chucks with deep penetrating power. saving set-up and resurfacing time.

THE VIKING TOOL CO., No. 650
Shelton, Conn.

Shelton, Conn.

Personnel: Ole C. Severson; Germain Severson; Aloysius P. McLeod; E. Y. Moore; John Mitenbuler; George E. Boullain; G. T. Osborne; L. W. Newman; M. R. Clark; M. K. Bryant; Wilfrid Pulver; S. T.

M. R. Clark; M. K. Bryant; Wilfrid Puiver; S. T. Carmody.

New Products: Inserted carbide single point tool, for Duplicating Lathes; new Viking "On the Job" adjustable chipbreaker inserted carbide turning tools; and new inserted tooth "Walting Hylix" slab mill. Products: The above new products, plus company's regular products: Inserted carbide shell end mills, end mills and face mills; alternate angle inserted high speed steel milling cutters; half side mill inserted high speed milling cutters; inserted carbide single point turning tools.

VLIER MANUFACTURING CO., No. 321 4552 Beverly Blvd., Los Angeles 4. Calif.
Personnel: Blaine H. Viler, Sr. and Mark Crawford.
New Products: Component Parts for Jigs and Fixtures;
Quick Clamps, and Toggle Pads.

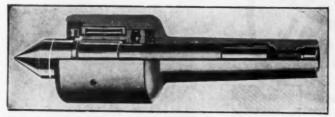
Inserted Carbide Single Point Tool

The Viking Tool Company



INCREASE

PRODUCTION



Visit our Booth No. 128 ASTE SHOW

These Ball and Roller Bearing Centers with the Exclusive OVERLOAD INDICATOR increase production, because work or centers will not burn out, regardless of how long the run. Wellengineered to provide years of trouble free service, even under the most severe conditions.

ACME TOOL COMPANY
71 WEST BROADWAY . NEW YORK 7, N.Y.

Finished Sin SECONDS OF SECONDS O

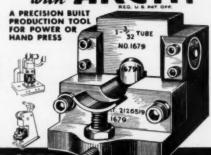
ARC-FIT actually notches out pipe or tube ends in less than 5 seconds to give you snug-fitting "T" or angle joints, ready for widding or brazing, without deformation or any extra finishing.

Stendard ARC-FITS for "T" joints using single size standard pipe from 3/4" to 2" shipped promptly from stock.

Special ARC-FITS for larger sizes or angular cuts supplied to your specifications... Quick-interchangeable punches and dies also available. Send us drawing of joint and material specifications for quotation and full information.

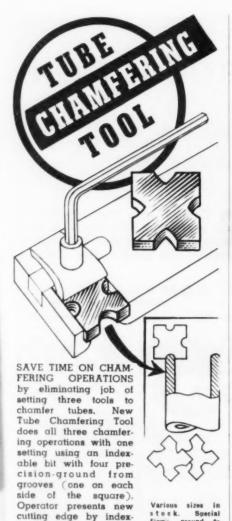
ARC-FIT IS PRICED SO THAT EVEN THE SMALLEST SHOP CAN AFFORD IT

Ask for descriptive Bulletin MTB.



Vogel TOOL & DIE CORP.

PAT. NO.



Each bit ground with 4 form chamfering. grooves to fit need. Write for further details

forms ground to

specs. Sandard bit

prices are: \$1.75

to \$2.50 each.

DIUS TOOL CO

ing to next position.

Tools used on tubing

from 14 to 21 gauge.

Also used for shell



Pneumatically Tensioned Belt Grinder Vonnegut Moulder Corporation

Products: Torque Thumb Screws; Spring Plungers; Spring Stops; Fixture Keys; Toggle Pads; Quick Clamps; Component Parts for Jigs and Fixtures. Plungers;

VONNEGUT MOULDER CORP., No. 400 1819 Madison Ave., Indianapolis, Ind.

Personnel: J. N. Clyne; Oliver S. DeHaven; Eric Lindenborg; Ed Hale; B. W. Smart; Anton Von-negut; and Walter Ryman.

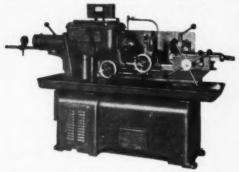
ew Products: Marschke Two-Motored Polishing Stand with a Ryman pneumatically controlled back stand idler pulley—and Vonnegut brush-backed polishing head for contour finishing, Marschke ST235B Turn Table Machine with 6-72 Marschke abrastwe belt unit and a Vonnegut brush-backed polishing head for deburring and polishing circular products, like gears, jet engine turbines and compressor wheels. A Marschke HS-168 Series A Pneumatically Tensioned Belt Grinder and Polishing Machine (illustrated), with small contact wheel and high speed spindle for off-hand cleanup operations on contoured surfaces of small work-pieces. Marschke HS-168 Series B Machine similar to the Series A Machine but with small, narrow contact wheel for fillet grinding Vonnegut Portable Brush-Backed Polishing Head with flexible shaft drive. New Products: Marschke Two-Motored Polishing Stand

M. PAUL WAHLUND MECHANICAL LABORATORY No. 543 Grant, Iowa

Persannel: M. Paul Wahlund; Mrs. M. Paul Wahlund; Raymond A. Dull; Stanley Evans; Charles R. Ruhl; Van O Ashmore.

Products: Production tools and attachments for small lathes. (13 inches and under.) Jig plates, Face Plates, Bed Turret, Straddle Knurling Tool, Tailstock Turret Attachment, Taper Attachment, Draw-in Collet Attachment, Tangent-cut Box Tool, Triplex Boring Bar Holder, Threading Dial Indicator, Semifinished Chuck Backs. Emphasis will be placed on the Bed Turret, Pilot Wheel Type, Automatic Indexing. A fine, precision tool.

WALDES KOHINOOR, INC., No. 751
47-16 Austel Place, Long Island City 1, N. Y.
New Products: Trunc Growing Tool for precision



Plain or Back-Geared—Forged steel spindle with anti-friction precision bearings, friction clutch and brake. Spindle nose, 23%"-8.

Write today for complete details.

HERE IT IS!

The new Simmons No. 2 Turret Lathe, offered to you with three distinct advantages:

- Low Cost
- · High Precision
- Early Delivery

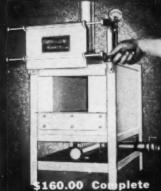
11/4" bar capacity...14" swing over ways. Micro-Speed Drive offers infinite speeds—plain, 375 to 1500 RPM; back-geared, 44 to 750 RPM — for bar or chucking work. Power feed to turret.

SIMMONS MACHINE TOOL CORP.

1725 North Broadway, Albany I, N. Y.

New York Offices: 50 East 42nd Street

FAST, ECONOMICAL HEAT!



Model No. 2 Bench Type Maximum Temperature 2000° F Heating Chamber 7" Wide. 12" Lung. 5% High.

BAKER & 850 PASSAIC AVENUE HEW YORK WHY USE LARGE EXPENSIVE HEAT-TREATING EQUIPMENT FOR THOSE SMALL JOBS THAT CAN BE DONE BET-TER, FASTER and CHEAPER WITH A BAKER FURNACE?

Atmospheric Burners. No Noisy Blowers, No Parts To Wear Out. 1500° F In 15 Minutes and 1900° F In One Hour.

One Connection Only.

All Models Complete With Accurate Pyrometer and Thermocouple.

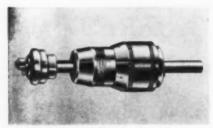
Illustrated Booklet Covering Larger Models on Request.

COMPANY, INC.

EAST NEWARK, N. J.

CHICAGO

SAN FRANCISCO



Truarc Grooving Tool

Waldes Kohinoor, Inc.

cutting of internal grooves; can be used with drill presses, lathes, or hand machines equipped with chucks or collets.

Products: Complete line of Truarc Retaining Rings; several machine assemblies will be displayed to illustrate the specialized functions of various types Truare rings

WALES-STRIPPIT CORP., No. 1412 North Tonawanda, N. Y.

WALKER-TURNER DIV., KEARNEY & TRECKER CORP., No. 1905 Plainfield, N.

WARD LEONARD ELECTRIC CO., INDUSTRIAL CHROME DIV., No. 139

Chicago, Ill. Personnel: Walter R. Dawson; B. E. Stechbart; Paul Blakely, Jr.; P. A. Blakely; Frank Beede.

New Products: Chromaster industrial chrome plating equipment; Models A20, A50, A250; also, Chromasol



Mounts on any screw cutting lathe and produces a perfect thread independent of operator skill. Indexing system presents each of ten cutter teeth successively to the work allowing maximum cuts to produce a perfectly formed thread. Duplicates threads without gauging. Write for Bulletin 110.



RELY ON RIVETT, The Master Craftsman's Master Taols

Solution for industrial chrome plating applications.

WARNER DIVISION-CLINTON MACHINE CO., No.

21535 Groesbeck Highway, Detroit 5, Mich.

Personnel: Gene Burch; Terry Merritt; Earl Sexauer; Harold Sexauer; Fred W. Cammann; B. J. Dunkle; Art Ferriss; and Frank Elston.

Art Ferriss; and Frank Elston.

New Products: Model 952—Model HP52 and Model

J52 Metalinaster Disintegrators. The Model 952,
illustrated, used to remove broken taps from work
pleces. Production changes can now be made after
a die is produced and hardened with the use of
this equipment; die corrections can often be made
without affecting the temper, and additional holes
can be made in hardened dies. Electrodes can be
produced in almost any shape.

WAUKESHA TOOL CO., No. 643 Waukesha, Wis.

Preducts: Short Shank Inserted Blade Reamer and Inserted Blade Shell Reamer; both tools offer a choice of carbide tipped blades or high speed steel.

THE WEATHERHEAD CO., INDUSTRIAL DIV., No. 351

Cleveland 8. Ohio Personnel: A. D. Hodge; A. J. Culbert; Frank Nemeth; Robert W. Hass; Kenneth Willmann; John G. Guardiola.

New Products: Ermeto tube fittings reducer.

Products: Ermeto Steel and Stainless Steel Tube Fittings, Reusable Hose Ends and Industrial Hose, Industrial Tube and Pipe Fittings (Brass).

WEBBER APPLIANCE CO., INC., No. 241 Indianapolis, Ind.

WEBBER GAGE CO., No. 705 12905 Triskett Road, Cleveland 11, Ohio

WELDON TOOL CO., No. 305 3004 Woodhill Road, Cleveland, Ohio

WESSON CO., No. 646 1220 Woodward Heights Blvd., Ferndale, Mich.

Personnel: Cy Devorecki; Joe Helmel; Jack Andrews; Virge Fortner; Dick Sykes; Jos Shover; Bob Wagner; Bill Bader; Jim Smith; Jerry Bogner.

Products: Band Type insert holders; Fine pitch cut-ters; Standard Flat tools; Special Carbide tipped tools; Standard and Special carbide blanks; Vises.

Metalmaster Disintegrator

Warner Division-Clinton Machine Co.



STOP DUSTS INSTANTLY

with

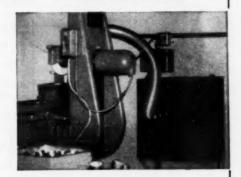
DUSTKOP

Available from stock of 22 standard models

300 cfm to 10,000 cfm

fer: Surface Grinders, Tool and Cutter Grinders; Polishers and Buffers; Abrasive Belts and Discs; Woodworking and Plastic Industry Equipment . . . DUSTKOPS collect almost all kinds of industrial dusts.

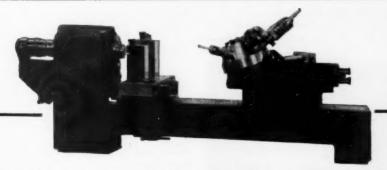
Ask for Cetalog 605-2. Describe dust problem for recommendation by return mail — no obligation.



AGET-DETROIT CO.

205 Main St.

Ann Arbor, Michigan



Produce your small precision parts with

Derbyshire

ACCURACY

Write for Catalog

Illustrated:

No. 750 PRECISION Lathe with 22" bed; Ball Bearing Headstock with spring-bind collet closer attachment; Forming Slide Rest; Sixposition Turret. Chuck capacity .004" to .315". Spindle speeds to 18,000 RPM.

F. W. DERBYSHIRE, INC. 157 HIGH ST. WALTHAM 54, MASS.

ECONOMICAL

SIMPLIFIED CONTROL



16" Shaper

Automatic Pressure Lubrication.

Cutting Speed Indicator.

6 Speeds, R.P.M. 26-152.

V Belt Motor Dr.

22" Shaper

Power Downfeed

Universal Table

Cutting Speed Indicator

8 Speeds, R.P.M., 12-132.

V Belt Motor Dr.



ATTRACTIVE DELIVERY

Illustrated Quotation Will Be Made Upon Request

MACHINE COMPANY, INC. BROOKLYN 31, N. Y. . TEL. TRiongle 5-2103 & 2157 PIONEER

WEST POINT MFG. CO., No. 240
Farmington, Mich.
Personnel: Arthur Lord; Harold Steintrager; J. B.
Reinerson; Steve Turk.
New Products: New Clamp Assemblies, Hand Wheels;
the Wesps Quick Action Fixture Clamp (illustrated). designed for holding work pieces; available in five sizes, unit is rust-proofed and has spherical washers, permitting compensation for irregularities in the

piece work piece.

Products Clamp Assemblies. Eye Bolts, Cams. Clamp Straps. Spherical Washers, Clamp Rests, Quarter Turn Screws, Swing Bolts, Plain Washers. "C" Washers Swing "C" Washers, Shoulder Screws, Acorn Nuts, Flange Nuts, High Tensile, Strength "T" Bolts; Tee Slot Nuts, Coupling Nuts, Fixture Keys, Rest Buttons, Locating Pins, Jig Rest Buttons, Adjusting Head Screws, Knob Shoe Assemblies, Hand Knobs, Speed Handles, etc.

WESTINGHOUSE AIR BRAKE CO.,—INDUSTRIAL PRODUCTS DIV., No. 1016
Wilmerding, Pa.
Personnel H. W. McCracken; A. J. Bent; R. R. Stevens; J. P. Cooper; E. E. Hewitt; G. C. Farmer; E. W. Kind; P. E. Lagatolia; D. S. Permar; V. C. Diefenderier; G. Nixon; F. S. Whaley; R. A. Finley; R. T. Shafer; E. E. Flynn; E. J. Boehs; C. L. Deemer
New Products: New line of Programmic Industrial

Deemer
New Products: New line of Pneumatic Industrial
Cylinders with cushioning feature, wide range of
sizes, stroke and all types of mountings. A 15 h.p.
"Y" Air Compressor Unit—complete unit mounted
on 126 gallon tank. "V" belt motor drive. New
line of lightweight panel mounting Pilotair Valves,
Products: Complete line of pneumatic control devices
including controllers, actualors, relaws, reducing
valves, positioners etc. Four operating displays.

WETMORE REAMER CO., No. 747
418 N. 27th St., Milwaukee, Wis,
Personnel: J. C. Bowen; M. Krauthoff; P. J. Dries;
H. Sleß; and H. Fisher.

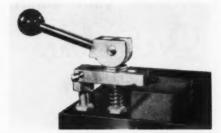
New Products: Company is now processing its reamers New Products: Company is now processing its reamers with a liquid boning operation. Finished ground reamers are liquid boned on their cutting edges, removing all grinding burss and producing a keen cutting edge that results in smoother reaming and provides increased tool life.

Products: Selection of standard line of inserted blade reamers. In addition, a group of special tools, including pitoted line reamers, boring bars, multidiameter tools, rough boring tools and facing heads.

THE WICKMAN MANUFACTURING CD., No. 1105
15533 Woodrow Wilson Ave., Detroit 3, Mich.
Producta: Wickman-Neven Steel-Bonded Diamond
Wheels, for off-hand grinding, cutting-off and chip
breaker grinding. Resinoid-Bonded Diamond Wheels
for carbide grinding, where fast-free cutting is a
factor. Wickman-Neven Model GF-2A Bench Grinder;

Center Cam Fixture Clamp

West Point Mfg. Co.



SEE US AT THE A.S.T.E. EXPOSITION . . . BOOTH 1250 WHERE THESE FINE MACHINES WILL BE EXHIBITED:

PROMPT DELIVERIES-NO PRIORITY REQUIRED!

BORING MILLS MILLING MACHINES JASPER • HERO • HURE S.A.B.C.A. • STEINLE RADIAL DRILLS AJAX . G.S.P IRONWORKER-Univ. WORMSER

.

PRESSES RASKIN GRINDERS HAHN & KOLB HARTEX LATHES STAR . KERN

MUELLER • SIMPLEX SELECTRONIC • PEGARD VIKING SAWING & FILING HAHN & KOLB MULTI-PURPOSE MACHINE HOMMEL

MANUFACTURERS OF:

MOREY No. 2, 3, 4, 5 Turret Lathes MOREY No. 12M, No. 30 Vertical **Profilers**

MOREY Vertical Shapers, 10", 14" MOREY Automatic Lathes-Heavy

Favorable Deliveries with Priorities

Note: We are American distributors for Hahn & Kolb

MOREY MACHINERY CO., Inc. Manufacturers . Merchants . Distributors 410 Broome Street New York 13, N.Y. Telephone CAnal 6-4700

Model GF-3 Tool and Cutter Grinder, The Wickman Tapper, an attachment for reversible machines, to provide tap protection on blind and through holes.

WIEDEMANN MACHINE CO., No. 1915
4272 Wissahickon Ave., Philadelphia 32, Pa.
Personnei: Theo. A. Weidemann; John H. Powers;
James H. Chadwick.

James H. Chadwick.

New Products: New, fast gauging equipment on Model

R-41P and latest developments on the hi-speed

RA-41P turret punch press.

Products: Turret Punch Presses: Type R-2 (hand
operated), power driven type R-41P turret press.

15 tons capacity; type RA-41P hi-speed turret punch press.

WILLEY'S CARBIDE TOOL CO., No. 635

WILSON MECHANICAL INSTRUMENT DIVISION.. AMERICAN CHAIN & CABLE CO., INC., No. 1126 New York, N. Y.

WILTON TOOL MFG. CO.. No. 237
925 E. Wrightwood Ave., Chicago 4, Ill.
Products: Wilton Powrarm Positioner displayed under actual working conditions by means of an island which will be equipped with a working example of a power driven conveyor belt. Mounted on the belt will be several Powrarms, spaced at Intervals as if on a standard production line. Also power driven tools and screwdrivers.

ENGINEERING CORP., DYNATOMIC WINTER CORP., No. 84 Chicago, Ill.

A. WOODWORTH CO., No. 1323

Ferndale, Mich.
Personnel: R. Chadwick; G. Hohwart; E. Hohwart;
R. Goulder; A. Lundin; and L. E. Rogers.
New Products: Diaphragm Type Arbors: Plain I.D.
Arbors; Threaded Arbors; and Spline Arbors.

Products: Diaphragm Chucks; Diaphragm Arbors; Cone Lok Jigs; Cylindrical Gages.

........................

The Wilton Powrarm

Wilton Tool Mfg. Co.



#2 IMPERIA UNIVERSAL TOOL & CUTTER GRINDER



Equipped with 4 A.C. Motors and arranged for external and internal grinding with automatic table movement. Accommodates No. 50 National Standard and B. & S. No. 12 taper shanks. Coolant system for wet grinding and radius dressing attachment are standard equipment.

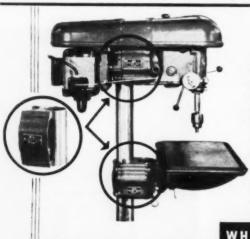
Swing over table	10"
Distance between centers	20"
Surface of table	5"×32"
Longitudinal movement	13¾"
4 spindle speeds, RPM	2900 to 5800
Net weight	1,050 lbs.

ATTRACTIVE DELIVERY

Illustrated Quotation will be sent upon request

PARKER MACHINE COMPANY, INC.

Whitney 17" Delta EXTENSION ADAPTER



INCREASE WORKING CENTERS FROM 17" to 25"

The WHITNEY EXTENSION ADAPTER is the answer to the need for a small drill press with capacity for greater center to center dimensions. It eliminates the need for a large, heavy duty press because of the working center needed.

No machine work required for installation. Can be installed or removed for use on other presses in just a few minutes. Accurately machined for perfect alignment, Fully guaranteed.

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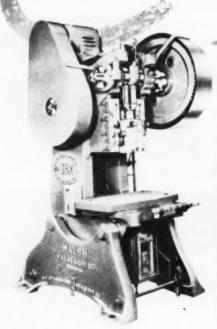


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Productive Maintenance . . .

A program for industrial mobilization

THE TIMES are putting American industry to the test with the double-barreled job of production for defense rearmament and production to meet unprecedented civilian needs. They ask the seemingly impossible—more production when capacity has already been reached.

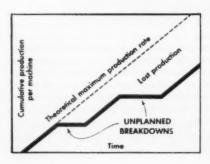
And the possibilities for expansion that were present in 1940, when the nation began arming for the second world war, do not exist today. At the present time, employment is virtually at its peak, and with the armed services requiring additional thousands of young men and women, there are likely to be fewer people, rather than more, to man the industrial front. Without additional employees, plant expansion is meaning-

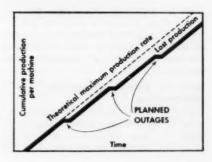
by H. F. McCullough
Manager, Service Shop. Div. and
H. D. Beale
Manager, Renewal Parts Div.
General Electric Co.

less. And, for an extra complicating factor, capital equipment is increasingly hard to obtain.

With the need becoming greater every day, the nation's industries must seek new ways of using what they already have to create extra production. They

Charts illustrate how Productive Maintenance, a program recently announced by General Electric, can increase production by cutting lost production due to unscheduled equipment, outage.







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STAR DUST USERS REPORT AVERAGE SAVINGS IN POLISHING TIME OF MORE THAN 78%: Available in ophthalmic-tipped tubes or in new applicator gun that delivers minimum quantities to individual jobs and eliminates all waste . . . In all grit sizes as fine as .0001".

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ACE ABRASIVE

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must get the most from every machine in the shop, using it to its fullest potential. And they must employ every means at their command to remove existing barriers to achieving maximum production.

How to keep equipment performing

One of these means is the establishment of an effective maintenance program to keep equipment performing as it was designed to perform—and, in effect, as it has seldom performed before, management has in many cases paid lip service to the importance of the job being done by the maintenance man in helping to keep equipment in good working order. But too often the job of maintenance is looked upon as a necessary evil—something to be done only when the occasion arises.

This negative attitude has failed to recognize in maintenance its positive productive potential. For, properly



HERE'S WHY... 2 or 3 solid-brazed face mills cost less than 1 inserted blade type! The same initial investment provides 1 or 2 spare cutters which can be used for production while grinding the original.

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Edge in Production

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handled, maintenance can be a constructive factor in increasing productive output. Looked at in this way, maintenance takes on new significance, as an answer to the nation's industrial mobilization needs. More than routine preventive maintenance, it becomes, truly, productive maintenance, capable of creating added output without additional machines. Believing that productive maintenance offers management a new tool for extending production capacity beyond existing limits, not just keeping those limits as they stand, the General Electric Company has developed a Productive Maintenance program that can be applied to virtually every type of industry in the country. This program, calling for a thorough and systematized



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Catalog No. 62 fells the "hole" story —write for it!

approach to the whole idea of maintenance as a positive rather than a negative force, has the inherent ability to help meet the nation's needs for full industrial mobilization.

A new concept of industrial operations

As a new concept applied to industrial operations, Productive Maintenance has as its goal the giving of the greatest possible aid to the plant as a whole so that it may achieve a level of production as close to a theoretical maximum as it is possible to come. Through far-sighted, long-range planning, Productive Maintenance anticipates the problems of unwanted production breakdowns and acts to minimize the probability of their happening. It is an approach to maintenance that no longer regards it as the step-child of production, but rather as something that can work hand in hand with production.

Be assured of continuous efficient operation by using Jackson air and hydraulic cylinders, available in various models and sizes to meet every air need. Precision built. Heavy cylinder walls, large diameter piston rods, mounted in long bronze bushing for rigidity and long life. Material and workmanship unconditionally guaranteed. Engineering counsel on cylinders gladly given. Write now for detailed brochure. No obligation.



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ONSRUD MACHINE WORKS, INC.

A sound productive maintenance program

What, then, goes to make up a sound Productive Maintenance program?

An effective Productive Maintenance Program consists of:

(1) an adequate staff of trained maintenance men, armed with

(2) the tools needed to perform properly the functions of (3) regular, routine checks of operating equipment, and

(4) planned outrage of this equipment at regular scheduled intervals. Rebuilding and modernizing machines during time of planned outrage is done readily with parts from (5) an adequate stock of mechanical and electrical spare parts. These basic points are expanded in subsequent paragraphs.

Management must provide for an



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adequate staff of trained maintenance men, must make available a budget sufficient to face up to the facts of the situation, and must provide tools and instruments as modern and functional as those supplied production crews. With the men, tools, and money it needs, Productive Maintenance is ready to go to work. Since the goal is to get the most out of the machines in the plant, it is necessary to know the worth of every machine to the plant, how it is expected to perform, and how much attention it demands from the maintenance man. For this purpose, a card index system, recording brief biographies of every piece of equipment, is kept for handy reference.

The card index system is an invaluable aid in the day-to-day, routine



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maintenance measures that are, of course, a vital part of the Productive Maintenance Program. The machine biographies guide workers in carrying out preventive maintenance projects, such as periodic inspections, routine cleaning, bearing maintenance, varnish treatments, oiling and the like. Such preventive measures are common enough in most companies. In a Productive Maintenance Program, however,

they are conducted under a fixed plan. With the card index as the record of past procedures, a definite schedule for periodically handling preventive problems can be readily worked out and adhered to, with a minimum of time and effort.

Important as the preventive activities are, they are capable, as the term implies, only of **preventing** machines from doing less than they usually do.

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But the aim of productive maintenance is added production, surpassing the limits of output that are already achieved. This means, in effect, getting machines to work more. Since they already are scheduled for use to the fullest, extra output can be gained only by minimizing their normal time-out from scheduled use for major repairs and overhauling.

Overcome breakdowns

Here is the heart of the Productive Maintenance idea, to overcome as far as possible unscheduled breakdowns of equipment causing delays in production, often when they are least expected or can least be tolerated. By providing for a system of planned outages—planned in advance for the time when the machines can be taken out of ser-

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Whether it's for production, general utility or both, the Wells No. 8 is an investment that will pay for itself many times over in savings of time, money and manpower. These savings can mean a lot in any shop... why not find out what they can mean to you. The Wells No. 8 has a capacity 8" x 16", rectangular, 8" diam., rounds. It is powered by a heavy duty ½ H.P. motor. Other sizes also available. See your Wells Dealer for further information or write for literature.



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vice for the shortest possible time—the stoppage will least affect total output and other operating units in the plant.

Everyone knows the pitfalls of unscheduled breakdowns. Primarily, they mean the loss of production—the loss of vital units coming off the line hour by hour— that can never be regained under today's conditions of around-the-clock operation with little time left over for picking up lost ground. In the integrated plant, where one opera-

tion depends closely upon many others, a whole production line can be shut down by failure of one critical unit.

Other serious consequences can result from unplanned shutdowns, not the least of which is the cost of labor involved. To gain speed in repairing the broken machine, maintenance crews must often work overtime at overtime pay. And they are frequently hampered in their work by shortages of materials and replacement parts—both of which

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serve to prolong the delay and lower output.

6"-12"

6"-12"

Done as rapidly as possible, unscheduled repair work still means lost manhours. Production men are forced to stand around idle. In situations where layoffs are necessary, the company risks the permanent loss of employees. When this happens, the company, after the shutdown machine is back in operation, may be forced to hire new employees who must be trained—and this training again means lessened productivity. All in all, the unscheduled breakdown causes labor, time, and money losses—which can be avoided through the planned outage phase of a Productive Maintenance program.

Height for both

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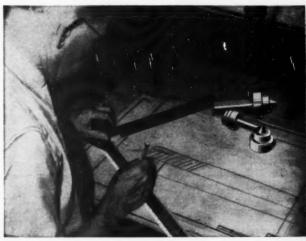




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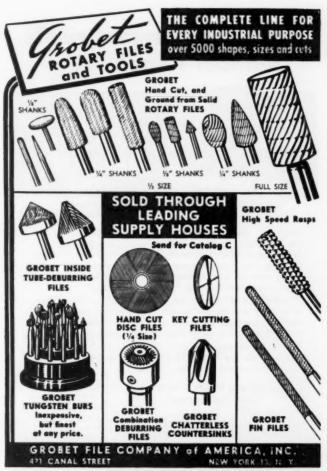
AVAILABLE from STOCK



Planned outage replaces unscheduled breakdowns

For the planned outage is designed to replace, as far as possible, the unscheduled breakdown by taking the machine briefly out of service for a thorough time—and protection—saving repair job before it reaches the point where it might break down of its own accord. To do this effectively, a com-

plete, systematic survey is first conducted—of the plant and how it operates, of the equipment, and the role of each machine in relation to the others. Broad in scope, the survey thus analyzes, first of all, the entire operation of the plant. It then determines which equipment is the most critical, which carries the heaviest loads. It goes on to list machines and units in the order of their vulnerability, noting



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the condition of each—its age, state of repair, severity of duty, and similar factors that will enter into determining the desirability of additional repair and the kind of maintenance required. On the basis of this survey, recommendations can be made for a sound, overall planned-outrage program, and the means can be devised for handling it with a minimum of interruptions to the normal production schedule.

Since productive maintenance is a long-range, continuing program, not everything can be done at one time. The program is, rather, realistic and economical in operation, designed to tackle first things first. Even if the plant had the money to do everything that needed doing at once, it would be self-defeating in stopping production altogether.

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With the new, improved "HARDSTEEL" Drill, you can do accurate, smooth drilling, countersinking, counterboring and reaming in steels hardened by any process without first annealing the work. And they work with equal ease on work-hardening steels and high carbon—high chrome steels of any degree of hardness.

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Write for information

Equipment survey

The equipment survey in the productive maintenance program serves to remove the guesswork from maintenance. Because of the total picture that it gives, other important improvements can be made at the time of the planned stoppage, improvements that might have necessitated stoppages of their own were they allowed to wait unattended.

Included as an important part of the equipment survey is the recommendation it gives for stocking an adequate supply of needed renewal parts. By being able to look far enough ahead, by preplanning the replacement parts aspects of maintenance, the problems of delivery delays and temporary unavailability can be largely overcome. This foresight, too, can pay off in terms of less repair—time delay and consequent added production.



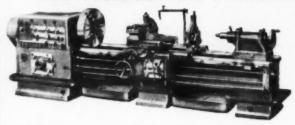
The need for increased production throughout industry is great—and seting up a far-reaching Productive Maintenance program to achieve that added output should not wait. Recognizing this, the General Electric Company has taken active steps to help maintenance men make management aware of the true value of Productive Maintenance. It provides maintenance men with a kit of tools, a series of aids, as it were, providing the facts and

guidance they need to carry out their own productive maintenance program and to convince their management of its necessity for industrial mobilization

Productive Maintenance is for all industry, whether a metalworking plant, paper mill, refinery, steel mill, rubber plant, or chemical plant. And Productive Maintenance is for every kind of equipment, all the machines that are producing the vital products for military and civilian demands.

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Look before you leap . . . think before you speak

by Edmund Mottershead

THERE IS more to effective speaking than just a flow of language. The "glib talker" is no more liked or respected by his fellow workers and listeners than the man who has nothing to say. If you as a foreman hope to become more effective as a leader through developing the ability to speak effectively, you will have to stop and consider what you actually know about your subject.

Perhaps you are thoroughly conversant with all of its technical and social aspects and implications. Perhaps a little self-examination will reveal serious gaps in your own knowledge, which will mean that you must get the necessary information before talking to your listeners.

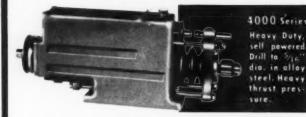
You have, I hope, already studied your prospective listeners and more or less determined which of their basic motives and desires you will appeal to in order to make them want what you have to offer. Your problem in providing factual information is primarily one of selecting that material which will be interesting to them and relevants to the points you are making.

You persuade people by appealing to their basic motives. You appeal to their basic motives by talking about the things which will be of greatest interest to them. What? There are three types of things to talk about, things which will hold their interest:

You may use illustrations which are familiar to their life experience. You may use specific or concrete examples. You may use an occasional illustration or phrase which is novel or original. These are the three "elements of interest."

1. The familiar; 2. The concrete; 3. The novel.

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 Both LOCKE units are capable of deep hole, dwell and jump gap drilling. 3¾" overall width permits close assembly for multiple operations. Let us demonstrate or send for full information.

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What do we mean by saying that you must use illustrations which are familiar to the life experience of your listeners? More than just talking about the things that they know about and have had some experience with. We must remember as a fundamental principle that each of us requires two things of life:-that life "make sense" or have meaning to us as individual; and that as individuals we have a meaningful part to play in the whole scheme of

existence, as we live it.

Your listeners must be able to understand the things you talk about, and they must also be able to appreciate or evaluate them. People will understand what you are talking about more readily if they have had some personal experience or contact with the things or events you are describing. They can evaluate and appreciate the importance of what you are saying if it makes sense in terms of their experiences.



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Localites are available through electrical wholesalers everywhere.

One of the best illustrations of this principle that I have ever seen is the enrollment in my own classes in effective speaking and human relations. At first glance, it might seem reasonable that younger business and professional men, younger salesmen and foremen, might be more interested in learning to speak effectively, because that ability would help them increase their earning power, increase their ability to handle

people, would in other words hasten their success. Not so! The bulk of the students have consistently been the men past 40 years of age and never 50. Why? Simply because these older men have had more life experience, can look back over their own lives and see occasions when they might have been more successful had they been able to speak effectively. They can both understand, intellectually, the application of the



principles of effective speaking to their lives and work, and also can appreciate its value emotionally because of their own life experience.

Thus the most effective way to interest your listeners is to talk about the things which are familiar to them. What are some of these things with which they are familiar? Life itself is a subject of unlimited scope. Anything in life will be familiar to somebody. The problem you have, however, is that of selec-

ting things which will be the greatest common denominator of the experiences of the group you face at the moment. If your listener is a single individual, his own life experience is the key to his interest. That is why I have previously mentioned that fact that you need to know a great deal about your listeners, their age, sex, occupation, education, and backgrounds in general.

Depending upon your listeners, a few of the major common denominators of



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human experience would be:-bodily functions and health, eating, drinking, sleeping, eliminating, sex and reproduction, disease, breathing and rest; clothing, for utility and taste, materials and styles; housing of all kinds, homes, houses, apartments, offices, factory buildings, public housing projects; vices of all kinds; amusements, ranging from games at home to night clubs, movies, hobbies, radio, the theater; cultural

pursuits; religion; work and play; politics.

The field is unlimited. Your problem is to pick out the elements of life which will be most familiar to your listeners, and talk about those particular elements which have some bearing on what you have to say.

What do we mean by using specific or concrete examples? Just being definite and to the point. It is the difference



between saying, "A bunch of us went bowling," and saying, "Bill and Sam and I beat the Hot Shots last Wednesday." It is the difference between telling a worker to be accurate and telling him to work within close tolerances.

When you first began to think about talking on your particular subject, you recalled a personal experience that motivated you to talk. So to begin with, you have a story to tell about your own experience. The first development of all literature came in story form. Homer, the story teller of ancient Greece. Virgil, the poet-narrator of Rome, the Medieval bards, all owed their popularity to the fact that people like stories. The American lumberjacks amused themselves during the long evenings by creating the legends of Paul Bunyan. Andersen's Fairy Tales have thrilled the children of all lands for decades.



If possible, get some other stories similar to yours. Other people have the same problems. Probably other people have had similar experiences to those which led you to talk on your subject. Tell them a story!

If you can find a story involving some famous person to illustrate your talk, so much the better. It is often more effective to tell the story of Napoleon eating green apples before the battle of Waterloo to illustrate the importance

of the little things in life, than just to tell of some small coincidence in the life of an average person. Or, if not a story about a famous person, a story about someone we all know is effective. During the last war, a letter from an escaped prisoner in Germany who happened to be the brother of a friend of mine meant a great deal more than all the atrocity stories in the newspapers. It brought home to me personally just what was going on.

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Historical illustrations are also effective. These may be in the usual sense of "history," or they may be drawn from your own or the company's past experience, the experience of other company's etc. Use historical facts when you can.

Every once in a while you will find yourself speaking of a matter which requires you to get down to brass tacks and count noses. Before you can convince us that a problem of safety is important, we want to know how many people are affected; how much it costs us in dollars and cents to go on with present practices; how much the new proposal will save us or cost to install. When you talk about a new method we want to know how it will affect wages and costs. When you mention a public works program we want to know what it will cost and how many families will be helped. And when you use statistics, dramatize them!



Probably no more famous dramatization of statistics is on record than Nicholas Murray Butler's well known breakdown of the cost of World War I:

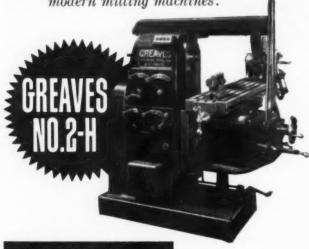
"The money spent by all the nations for destructive purposes of the World War amounted to four hundred billion dollars. Do you know what we could have done with that money if we had used it constructively?

"We could have built a \$2500 house, furnished it with \$1000 worth of furni-

ture, placed it in the middle of five acres of land worth \$100 an acre, and given this entire estate outright to every family in the United States, Canada, Australia, Wales, Ireland, Scotland France, Belgium, Germany, and Russia.

"We could have given to each city of 20,000 inhabitants or over, in each country named, a five million dollar library and a ten million dollar university. Out of what was left we could have set aside a sum at five per cent

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that would have provided a \$1000 a year salary for an army of 125,000 nurses and another army of 125,000 teachers."

Dramatization like that takes some work, thought, imagination, some concentration, but the results are indeed worth the effort. Why? Not only because the statistics are specfic, but because the dramatization puts the figures in terms your listeners can understand and appreciate. Four hundred billion dollars

is almost meaningless. A home and five acres of ground for everyone in ten great nations really means something!

People have always been interested in finding the answers to things. "Why?" is one of the first questions a child asks. And in this calculation of possible causes and effects we resort to analogies. The life of a man is compared in detail to the life of a tree. The problem of directing the destinies of a state or a corporation are compared to the cap-

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taining of a ship. Situations which can be compared in detail, especially comparisons which make use of a fairly well-known thing in explaining something abstract are very effective. When asking yourself what you know about your subject, try to think of some good analogies.

What do we mean by using illustrations or phrases which have novelty? Simply that people are curious, and that curiosity itself usually has sufficient force to draw their attention for at least a limited time to what you are saying. We can appeal to their curiosity by saying something which is outside their experience or knowledge, BUT, we must immediately relate it to their experience and understanding. If the ideas or facts are not soon explained in terms your listeners will understand and appreciate, they will very soon lose interest entirely.

In using the element of novelty to



gain and hold your listeners' interest, what sort of things can you talk about? Strange places, strange people, customs, new facts on almost any topic, technical terms, new twists to old ideas, unusual analogies, and other illustrations which are new, different. But remember that an idea or an illustration is not necessarily of value because it is new; that even the pulp writers of Future Science Fiction and similar stuff must maintain the logical assumptions of their stories

and keep their pseudo-science in a frame of understandable human thinking and emotions. The novelty must be related to other elements of audience interest to be of lasting value in getting over your message.

Monotony of any kind kills interest. In another article I shall discuss variation in voice and manner and monotony as a whole, but it is worth nothing here that monotony from the use of the same kind of material, such as

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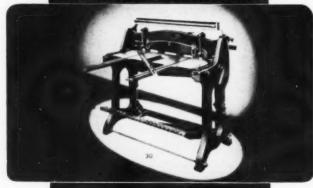
nothing but analogies, nothing but statistics, can be as deadly to listener interest as any other kind of monotony. To tell one funny story after another throughout your talk may hold attention for a time, but sooner or later your listeners will want you to get down to business and say something worth listening to. Mix a story with a statistic, a historical account with some personal experience. Keep your illustrations varied and to the point.

What are you going to appeal to to get desired results from your listeners? Their basic motives and desires. What are you going to talk about? Things which are familiar to their life experience, which are specific and concrete, which occasionally are novel. And in addition you will use some change of pace, some variation in the sort of illustrations you use.

The main problem in self-analysis to find out what you know about your

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subject is that of selecting the facts, the stories, the material which will be most appropriate in furthering your message. It is even more important, sometimes, to determine what NOT to to say that it is to pick out what you will say.

The foreman or supervisor who is seriously trying to improve the effectiveness of his speaking will do well to review in his mind everything he knows about a problem before speaking on it. The "informed" man is more respected than the "smooth talker."

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MARCH, 1952

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2. THE MODEL E CLEVELAND LEAD SCREW TAPPING MACHINE attains a new high in speed, economy and fidelity on thread form; employing the interchangeable lead screw feed, it is designed and powered for high spindle feeds, and permits the use of multiple heads for tapping groups of holes. The Cleveland Tapping Machine Co., 1201 Canden Ave., S.W., Canton 6, O.

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4. THE AIRCO NO. 20 RADIAGRAPH is the first machine of its type designed to be used as a traveling carriage for mounting such equipment as the Aircomatic machine and Heliweld Machine Holder, in addition to fulfilling the requirements of a portable, motor-driven, straight track-guided cutting machine. Air Reduction, 60 E. 42nd St., New York 17, N. Y.

5. EJECTION, GUIDE, GAGE OR STOP PINS AND FINGER STOPS are featured in an illustrated brochure which includes a price list. Available from Twentieth Century Mfg. Co., 3726 W. Montrose Ave., Chicago 18, Ill.

6. DUST COLLECTORS are described in detail in this 24-page catalog which includes both cabinet and cyclone types, in sizes ranging from 1/3 h.p. to 5 h.p. Also shown are a complete line of fittings and accessories, and a series of blueprint sketches giving the over-all dimensions of each unit. Torit Mfg. Co., Walnut and Exchange Sts., St. Paul 2, Minn.

7. HYDRAULIC ELEVATING TABLES, which can be used for die handling or work positioning and for strip and sheet feeding operations, are offered in a range of capacities from 1 to 10 tons, in a variety of models and with various ranges of elevation. Bulletin No. 206 may be obtained by writing The Raymond Corp., 3788 Madison St., Greene, N. Y.



8. THE DIAFORM WHEEL FORMING ATTACHMENT, a lightweight, portable instrument, provides a simple method of accurately truing complex forms on grinding wheels. Also described are an adapter to permit Diaforming on universal and tool grinding machines, circular grinding attachment for surface grinders, Diaform template casting flask, left-hand model Diaform, and tandem diamond block. Pratt & Whitney, West Hartford 1, Conn.

9. A GOLDEN ANNIVERSARY PUBLICATION relates the result of Flexonic's (formerly Chicago Metal Hose Corp.) expansion and diversification (Metal Hose Div., Expansion Joint Div., Bellows Div., and Aircraft Div.) and gives an illustrated history of the company and its present day activities. Flexonics Corp., Maywood, Ill.

10. A 10-PAGE CATALOG OF MILL-ING CUTTERS AND SINGLE POINT TOOLS lists end mills, face mills,

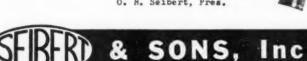


straight and offset turning tools, duplicating tools, etc. The Viking method of chip control is described, with a comparison chart of Vikide to other standard carbides for metal cutting operations, and a grade and speed suggestion chart. The Viking Tool Co., Shelton Conn.

11. HEAT EXCHANGERS for fresh water cooling marine engines and exchangers, for many industrial uses, strainers, tanks, oil coolers and an improved line of specialties for marine use are treated in two bulletins available from Sen-Dure Products, Inc., Bay Shore, N. Y.

12. SHOCK, INSTRUMENT, INDUSTRIAL AND MACHINERY PAD MOUNTINGS are covered in a 12-page booklet which includes a section on the selection of proper mountings and fundamental vibration charts. Catalog 504-B available from The Barry Corp., 700 Pleasant St., Watertown 72, Mass.





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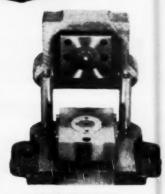
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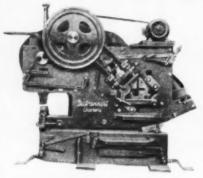


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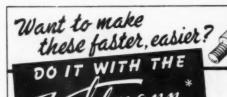
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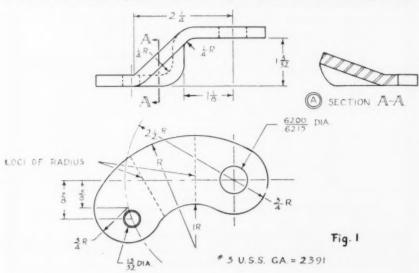
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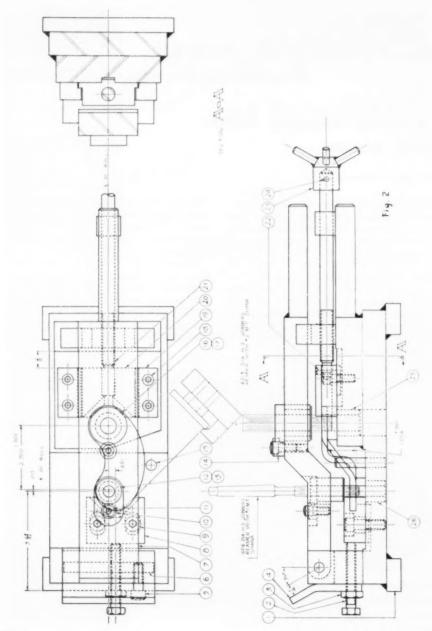
by Robert Mawson

THE MODERN plant uses special machining equipment, jigs, fixtures and the like to produce satisfactory machined details. These parts must be interchangeable and at the lowest possible manufacturing cost. To meet the first objective: interchangeability, the tools must locate the piece positively and hold it securely during the machining operation. Of importance is also a reduction in manufacturing costs and to do this the lost or unproductive time

must be the smallest possible percentage of the manufacturing cycle. The good tool designer, therefore, uses quick-acting features on the special machining equipment.

Figure 1 is a Brake Auxiliary Pedal Shaft Lever, made of No. 3 U.S.S. gage 2391 sheet steel, which is one of the details used on the automobiles built by The Studebaker Corp. When producing this part the steel sheet is first made to the correct outline, the two





394

holes machined under size, and then formed to the desired shape. The final operation is reaming the two machined holes and the fixture used for this work is illustrated in figure 2.

When building this fixture the following machine steel sections are first obtained: two $\frac{5}{8}$ x $1\frac{1}{4}$ x $5\frac{1}{8}$, one $\frac{7}{8}$ x $4\frac{1}{2}$ x $10\frac{3}{8}$, one $1\frac{1}{4}$ x $2\frac{1}{4}$ x $3\frac{1}{2}$, one 1 x 4 x $4\frac{7}{8}$, one $\frac{3}{4}$ x $1\frac{1}{2}$ x $3\frac{5}{8}$, one $\frac{1}{2}$ pipe x $4\frac{5}{8}$, and one $\frac{3}{4}$ x $3\frac{3}{4}$ x $7\frac{6}{8}$. These sections are then welded, machined on the surfaces "f" and the several holes as indicated machined to make the fixture base (I).

On the left hand end of the base is fastened, with two socket head cap screws (5), a C, R. Steel cover stop plate (4). Through a hole in this plate and threaded into a tapped hole in the base is a 34-16 hexagon head screw (2). After this screw has been adjusted for location it is fastened with a steel hexagon jam nut (3).

When making the bushing cover ma-

chine sections of the following sizes are first made: one $2 \times 2\frac{1}{2} \times 9\frac{7}{6}$ and $\frac{1}{2}$ inch pipe \times 4% long. These two details are then welded, surfaces "f" finished and the several holes shown in the illustration are machined to make the cover (7). When assembled, the cover rotates on a steel pin (6) which fits reamed holes in the base and cover.

On the inside machined surface of the base is fastened with two % socket head screws (9) a tool steel (hardened and ground) 90 degree angle plate (8). This plate is made with a tongue which can slide in a machined groove in the base. The plate is also provided with two slots so that the plate can be moved in the slot and then fastened with the screws (9).

In the bushing cover is located a tool steel (hardened and ground) liner bushing (13). To fit in this bushing is a tool steel (hardened and ground) bushing (12) machined with a hole

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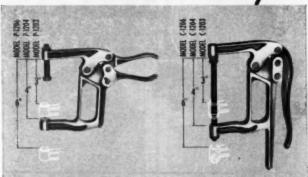


suitable for guiding a .406 reamer. This bushing is held from rotating with a 5/16-18 socket head screw (11) and round X-L-O,R.K-I clamp (10). In the fixture base is driven a % dowel (15) which projects far enough to act as a guide when placing the workpiece in the fixture.

Also accurately placed in the cover is another tool steel, (hardened and ground liner bushing (17). In this detail is placed a tool steel (hardened and ground) bushing (16) suitable for guiding a .6213 reamer. This guide bushing is also held stationary with a 5/16-18 socket head screw (11) and a round X-L-O,R.K-2 clamp (14).

On the fixture base are two machine steel, carbonize (hardened and ground) ways (19), each held in place with two 5/16-18 socket head screws (18). Machined to have a good sliding fit between the two ways is a tool steel (hardened and ground) 90 degree angle

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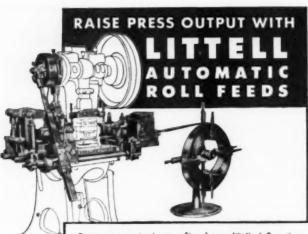
3052 DAVISON ROAD . LAPEER, MICHIGAN

block (20). This block is also provided with a tongue to slide in a machined groove in the base. It will be noticed that the angles in the block are also bevelled which holds the workpiece down when it is in contact with the block.

The angle block (20) moving screw (21) is made from C. R. Steel, cyanized, and passes through a clearance hole in the base right hand projection and through a threaded hole in the second projection on the base. The

left hand end of the screw is reduced in diameter and this is placed in a machined hole in the angle block and then held with a $\frac{1}{4}$ inch steel dowel (22). At the outer, or right hand end, of the screw is fastened a pin handle knob (23) with a $\frac{3}{16}$ inch steel dowel (24). This knob is made by welding four $\frac{1}{4} \times 1\frac{3}{4}$ long pins to a machine steel bar $\frac{1}{4} \times 1\frac{3}{4}$, then machining a hole to suit the end of the screw.

In the base and in alignment with the liner bushing (17) is placed a tool



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steel, hardened, rest bushing (25) and in alignment with the bushing (13) and also in the base is driven a tool steel, hardened, rest bushing (26). After the fixture has been assembled the angle plate (8) is adjusted so that the reamed holes will be in the correct positions.

To perform the reaming operation

The two reamers are held in the heads of a 3-Spindle L & G Drill press and adjusted to the correct distance of

2½ inches. The bushing cover (7) is first rotated against the stop plate (4). One of the workpieces is then placed in the angle plate (8). The piece is now fulcrumed against the dowel pin (15) to bring it into correct alignment. The screw (21), moved with the knob (23) is then brought in action and this moves the angle block (20) in contact with the piece to hold it securely in place.

The bushing cover is next rotated over the workpiece. The piece is now



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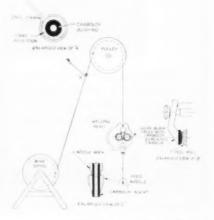
accurately located and securely held. The machine can then be started in motion and by the operator holding the fixture with the two pipe handles and feeding down the reamers the piece is machined. To remove the finish machined workpiece it is only necessary to rotate the bushing cover back against the stop plate, move the screw back with the knob for a short distance and the piece can be lifted out of the fixture. This tool locates and holds the workpiece quickly and positively and with the handle type construction the fixture is convenient and easy to manipulate.

The End

Carbide feed nozzles for automatic arc welders

By adding a Carboloy cemented carbide bushing inside the conventional feed nozzle tip for automatic arc welding, the General Electric Company has increased life of the nozzle tips up to 20 times. Wear is no longer a problem, and burning effect greatly reduced.

In one case, where the coiled electrode wire is especially abrasive, brass nozzles had to be replaced 6 to 8 times per week. The carbide protected nozzles are giving a service life of 3





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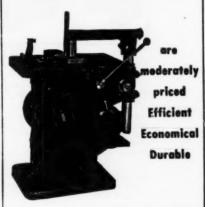
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months and better. On other operations where former life had not exceeded 3 weeks, the carbide nozzles are lasting as long as 12 months. In addition to the improved nozzle life, a more uniform narrow weld can now be maintained, as accurate guidance of the wire, formerly difficult once wear developed, is no longer a problem.

Improvements have been made with

cemented carbide at two other points to further reduce downtime and maintenance cost on arc-welding equipment. A carbide guide ring, added inside the fibre guide which keeps the electrode wire from riding off the overhead pulley, eliminates any possible danger of short-circuits from wire wearing through the fibre insulation and coming into contact with the metal sup-

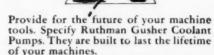
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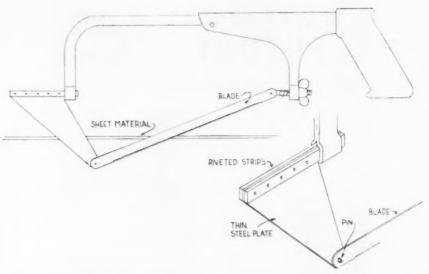
port arm.

The final application was at the guide block which locks the electrode wire in position against the conical feed rolls. When wear occurred at this point, positive feeding was impaired. To eliminate this condition the guide block is now tipped with a standard cemented carbide blank. The face of the blank is ground to provide a slight radius.

Hacksaw attachment cuts sheet material

by Tom Brown

By making up a simple attachment for the hacksaw it is possible to cut sheets of material of any length and width, such as corrugated iron, fibre, steel plate, etc. The attachment comprises a piece of flat steel plate of maximum toughness and strength to



resist bending and of a thickness not exceeding that of the average standard hack saw blade. This flat steel portion is riveted between two strips of metal which, when placed together, form a square section which will fit snugly into the square hole in the hacksaw frame. The hacksaw blade is hooked onto a pin brazed on to the bottom of the flat steel portion and its other end is hooked on to the adjustable anchorage at the handle end of the frame. When mounted, the blade makes an angle of 30 degrees with the line normally occupied by the blade.

In use, the saw frame is reciprocated

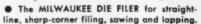
in the normal manner with the frame held horizontally and parallel with the sheet surface to be cut. The angle of the blade will cause the frame to move up and down with one end of the blade above the sheet surface and the other end below. The thin steel support for the blade will pass into the saw cut and thus any length of cut can be made.

Two blades, one each side of the flat steel portion, work well on non-metallic materials and cut a wide groove that prevents binding and nipping of the saw.



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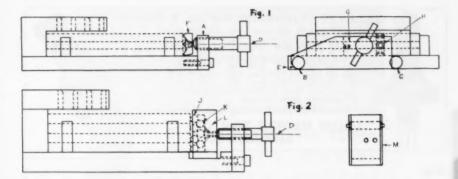
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Clamping of uneven parts by Robert Mery

We had occasion, some years ago, to work out a clamping arrangement for three plates, i.e. pressing plates of unvarying length against a registering surface.

In figure 1, latch A is pivoted on

shoulder screw B, and held back against pressure of screw D and screw C. Chamfer E allows swinging latch out of the way in the direction of arrow for the purpose of placing the plates into the drill jig.

Screw D, when actuated, pushes block F against the three plates. The three protrusions G take care of each





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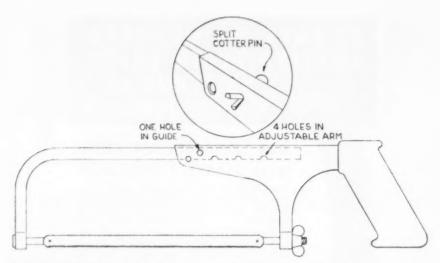
2749 SO. TROY STREET

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plate separately. Block **F** can rock sufficiently to engage each plate. Screw **D** is rounded off sufficiently to ease rocking. Screw **D** is turned down to about 3/32 size, fits very loosely through **F** and peened over to form an assembly. Pin **H**, fitting tight in **A**, and loosely in **F**, carries **F** in unison with **A** when this is swinging out.

In case plate require registering from another side, an additional V block like F can be used with a stationary bracket instead of the swinging latch

In figure 2 the four rollers J touch the four plates. By actuating screw D, channel container forwards three rolls, K. These rolls wedge between rolls J. All rollers move ahead and sideways until equilibrium is established. Theoretically, any number of plates can be taken care of. Rollers J are 3/64 dia. to engage side plates M very loosely. Side plates M are soldered into channel L.



Changing hacksaw blades easily

by F. E. Riley

The ordinary adjustable frame hacksaw is very good when a blade is properly held in it, but it becomes a tangle of odd bits and pieces when the blade breaks, or when it is desired to change the old blade for a new one. The ordinary adjustable frame saw can be converted to a rigid frame type in which the blades are quickly and easily changed by the simple process of drilling a few holes and fitting a split cotter pin.

A hole is drilled through the adjustable arm and its guide portion in the position indicated in the sketch. The hole diameter should be about \(^1/8\) in. Other holes are drilled through the arm when it is engaging with the various notches which adjust the frame for different blade lengths. The hole in the guide portion is used for placing the drill in the various positions necessary.

When the cotter pin is inserted, and the blade removed, it will be found that the frame remains rigid and does not collapse. The other holes enable the adjustable features of the frame to be utilized to the full. The pin can remain in position on the saw because an operator usually sticks to one length of blade for long periods.

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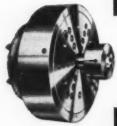
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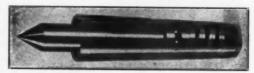
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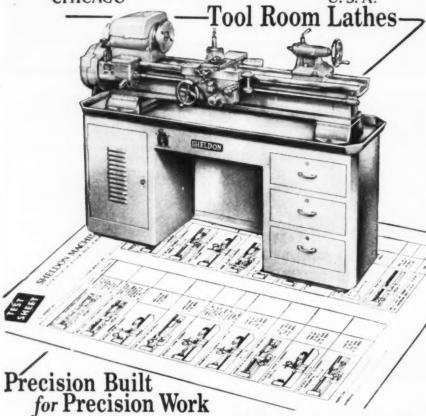
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Automatic contour facing lathe

. . . tracer controlled and with reversing spindle

. . . profile faces jet engine compressor discs

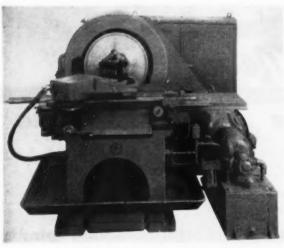
A new approach to the problem of profile facing cuts encountered in the production of jet aircraft engines is a new contour facing lathe, now in production at the R. K. LeBlond Machine Tool Co., Cincinnati, O.

Originally designed for profile facing of "cold end" compressor discs, the Contour Facing Lathe is adaptable to the facing of the many discs used in the various jet engines. Two headstocks are available: high-speed head for aluminum discs at the "cold end" of the engine, and the other for stainless steel and titanium discs. The machines can be reversing or non-reversing and can be equipped with either manual or automatic controls.

The carriage, a simple bridge across the abbreviated bed, carries a cross slide on which various types of tools may be mounted. A hand adjustment reading of .001" on a graduated dial sets up the depth of facing cuts.

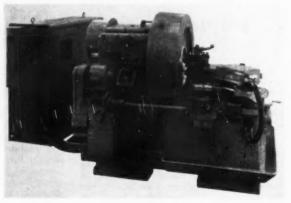
On the automatic version, the LeBlond Hydra-Trace mounted on the cross slide has been made an integral part of the design. The Hydra-Trace is a simple, single-directional tracer in which a stylus follows the contours of a flat template and hydraulically controls the path of the tool. The angle of the tracer slide is adjustable to meet the various conditions encountered in profile facing. Should pressure in the hydraulic system fall below 100 psi, a safety valve shuts off the entire machine.

The operating angle of the top slide together with tool limitations often make it impossible to complete the required profile in one pass from periphery to center in the conventional manner. To overcome this difficulty, the "across center" technique has been developed, whereby outside shoulders are machined when feeding from front to center and inside shoulders are machined when feeding from center to rear. It becomes necessary, therefore, to reverse the spindle when the tool reaches the center. To maintain the



A jet engine aluminum compressor disc being profile faced on a machine equipped with reversing cycle. The tool begins its cut on a 16'' diameter at 208 rpm, which results in 870 sfpm. This surface speed is maintained by

variable speed control until a maximum of 550 rpm have been reached at 6" diameter. The spindle speed is then kept constant across the center until the tool is 3" beyond the center and deceleration is begun. At the end of the cut, the tool is cutting on a 23" diameter and the spindle speed has been reduced to 145 rpm. When using a feed of .012 inches, the cycle time exclusive of loading is 4 minutes 50 seconds.



same direction of the cross slide, the feed drive must also be reversed when reversing the spindle. All of these operations, in addition to tool retraction and rapid traverse, are accomplished automatically on the LeBlond No. 1 Contour Facing Lathe. Spindle reverse, forward and reverse rapid traverse and feed are controlled by limit switches actuated by trip-dogs conveniently located for the setting up and adjustment of the cycle.

After the work has been loaded into the machine, the operator is required only to engage the tracer control lever and push the automatic cycle starting button. The angular approach to the work is achieved by a combination of the movement of the tracer slide and the rapid traverse of the cross slide. As the tool nears the work, the rapid traverse is converted to a constant feed and the Hydra-Trace controls the path of the tool to the end of the cut.

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ation, the spindle direction is also automatically controlled by a limit switch actuated by one of the dogs. At the end of the cut, both the tracer slide and cross slide are automatically returned to their starting position by rapid traverse.

The spindle speed is varied by means of a flat cam actuating a reactor which controls the variable speed unit in order to approach a constant cutting speed throughout the cycle. The cam may be modified or replaced to suit the required conditions. The extent of spindle speed variation is dependent upon the job and determines the electrical equipment furnished. In addition to the speed variation provided by the motor, three ranges are available through lever-shifted gears, and additional ranges obtained through pickoff gears. Full coolant facilities-pan, tank, filters, pump, piping and electrical controls-have been provided.

It is expected that automatic Contour Facing Lathes will be employed mainly for finish profile facing in high production setups. Where discs and wheels do not require the "across center technique, the non-reversing machine will be economical. This version — while also automatic—needs no spindle and feed reverse.

Where the single slide tracer is not applicable a two-directional tracer, which hydraulically controls feed in both directions, is offered. The variable speed drive, the automatic cycle and other features of the machine are unchanged.

In addition to setups previously described, the machine can be furnished with a power angular feed compound rest instead of the Hydra-Trace—in which case manual controls are furnished in place of the automatic cycle. This can be used when turning and facing rings which do not require contouring.

Cawi twist drill grinder

Two-and-three-lip twist drills from .078" to 1" diameter, can be ground consecutively in the new Cawi-Spiral Machine to a degree of accuracy not obtainable before, according to Kurt Orban Company, Inc., 21 West St., New



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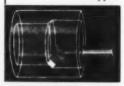
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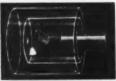
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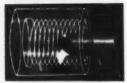


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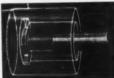
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The key to the machine's accuracy is a patented planetary drive gear system. For each revolution of the drive head, a two-lip drill makes 1½ revolutions on its own axis. For three-lip drills, the ratio is 1-1/3 to 1. The cutting lips are thus ground in sequence each time the drill revolves in contact with the grinding wheel. This method assures true concentricity of the lips with the drill body axis. The lips are ground exactly alike.



Only two chucks are needed to handle drills from 1/32"-5/16" and 5/16"-1". Chucks can be interchanged in less than a minute and are opened and closed by a turn of the hand. No auxiliary tools are needed. The use of the Cawi-Spiral method of grinding is claimed to result in longer drill life, with less need for resharpening; closer tolerances on drilled holes, often eliminating the need for reaming; increased drilling speeds; decreased vibration in drill presses. Pointing carbide twist drills and grinding a normal or increased lip relief angle and a short land with minimum relief at the cutting edges, are accomplished in a single operation in the Cawi grinder.



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Jaspar milling machines now available in U.S.

The Jaspar line of milling machines is now available in the United States through the exclusive distributorship of Morey Machinery Co., Inc., 406 Broome St., New York 13, N. Y. Built in Liege, Belgium, by Ateliers Jaspar S. A., the manufacturer is a 50-year old machine tool company whose name is highly respected in Europe.



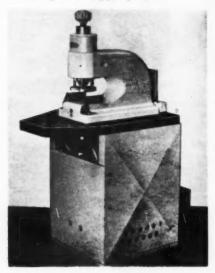
Jaspar Milling Machines are made in a range of models, both vertical and universal, in No. 2 and No. 3 sizes. In most instances, the universal type has been designed to incorporate climb-milling attachments. The machines are heavily and sturdily built so that the tables, when used for production manufacturing, can stand the maximum speeds of tungsten carbide cutters. They are equipped with main drive motors for the spindle and a separate motor for actuating the feeds of the table.

Automatic piercing press

The Dayton Rogers Manufacturing Co., 2824 13th Ave., S., Minneapolis, Minn., is introducing its Automatic Electric Piercing Press. Although this press has been in operation in their plant for approximately ten years, it is only recently that it has been made available for sale. The unit is stated to

be especially adaptable for piercing holes in fairly large parts, particularly where quantity requirements are limited.

This press requires no hand or foot levers to trip the machine, thus leaving the operator free to handle large parts with ease. The machine is put into operation through two contacts on a magnetic stripper plate.



The Electric Piercing Press is capable of piercing holes up to ½" in diameter in materials up to ½" thick. The ram of the press is in the bed of the machine, permitting the punches to be mounted upstairs for easier location of the pierced holes. It will receive a standard Allied punch and die and is provided with a non-repeat mechanism. The machine is mounted on casters, making it completely portable.





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TAC "universal" wrench has 64 socket sizes

A new tool which is claimed to be the nearest approach to a true "universal" wrench is the open-end ratchet wrench recently introduced by the Tubing Appliance Co., 7112 S. Victoria Ave., Los Angeles, Calif. This one wrench with 64 socket sizes will perform the work of an open end, crescent, box, socket, ratchet or crowfoot wrench, according to its manufacturer. It can be used with a torque handle for rated fittings. With sockets from %" to 4" in size, the "TAC" open-end ratchet wrench will do nearly any wrenching job, its makers say.

The open end of this wrench allows the wrench head and socket to fit on to tubing and down on the fittings. The socket and ratchet ring revolves around the tube in tightening the fitting. When the job is finished, the wrench is lifted from the fitting, the openings on the head and socket are aligned, and the wrench is removed.

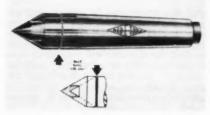
The manufacturer states that the open-end ratchet wrench is not a "special" tool, but is a universal tool, with wide applications and efficiency. One "TAC" wrench will out-perform



a variety of ordinary wrenches, in a variety of different jobs, they claim. This it can do because of the open-end feature, plus unusually strong steel alloys in the wrench. The full hinge, square drive, removable handle, ratchet arc are as small as 5°, extra thin wall sockets and overall compactness in design are among the tool's features. To increase the usefulness of the "TAC" wrench even more, adaptors, quickly snapped in, allow ordinary sockets to be used. Adaptors for Allen head internal wrenching and for turnbuckle rotation are also available.

Red-E carbide tipped centers with grinding "life line"

The Ready Tool Co., 550-B Iranistan Ave., Bridgeport 8, Conn., has made studies of hundreds of plants where carbide tipped centers are used on machine tools, through its Red-E sales engineers. These studies generally in-



dicate that centers are ground and reground to the point where breakage under the pressure of the work piece



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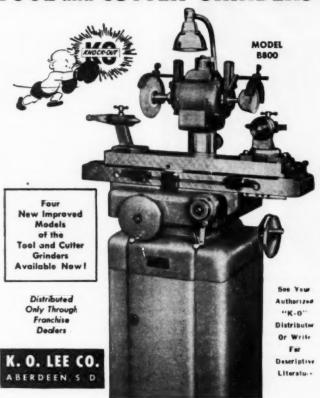
is a common occurrence. In some plants, inexperienced operators under various learning programs are assigned to the job of regrinding worn carbide tipped centers. Their judgment as to just how far to grind is strictly speculative, causing unexpected breakage that proves costly and is troublesome.

The Ready Tool Company, has eliminated these expensive replacements with a carbide tipped center that has a grinding safety "Life Line." The "Life Line" indicates the maximum amount

that the center can be ground and acts as a warning to the operator when regrinding. The center groove is accurately machined and painted bright red so that the operator will constantly have a guiding line at all times, and the operator can see when his grind has gone far enough for safety. The Red-E center carbide insert is made of sintered tungsten carbide by the "hot pressed" method, providing longer life from abrasive wear.

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bide tipped centers are available in all Morse, Brown and Sharpe, Jarno, Hendey, A.S.A., Norton and Reed tapers and sizes as well as in straight shanks.

Pullmax "Trimmer" cuts excess metal from stampings

The Pullmax Trimmer is the newest introduction to the line of sheet steel and plate cutting equipment manufactured by American Pullmax Co., 2455 N. Sheffield Ave., Chicago 14, Ill.

This machine has a wide demand in

the automotive, aviation, appliance and other industries making large and bulky metal stampings. These companies had a problem in cutting the excess metal from deep drawn and bulky stampings. Such size parts could not be worked on the regular Pullmax machines. After many requests, Pullmax designed and manufactured this machine called the "Trimmer."

For insertion of bulky work, the lower tool holder is raised and lowered by pneumatic pressure. It does all the



 Woodruff Key Seat Cutters by Reltool are furnished in both Shank and Arbor Types. Right Hand Cut, shank type, carried in stock; Left Hand Cut, special. Arbor Type Keyseat Cutters have staggered teeth, with side teeth relieved for narrow margin.

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work of straight, circle and irregular cutting that the standard Pullmax does. (Bars that hold circle and straight cutting attachments are removable.) The box construction frame, however, is circular in shape to provide clearance for large and bulky pieces.



The Pullmax Trimmer works mild steel up to 5/32" at a speed from 4 to 16 feet per minute. It has a throat depth clearance of 48" and is powered with a 1 h.p. motor. Mechanism is totally enclosed and operates in oil.

Producto high pressure springs

The Producto Machine Co., 990 Housatonic Ave., Bridgeport, Conn., announces the availability from stock of new High-Pressure Springs. These products have been designed for all die applications and general machinery use. The drawn, high carbon, oval wire permits a deflection of about 30%, where maximum load rate and normal movement are required.

The spring work in hole diameters from 3/4" to 2"; over rod from 21/64" to 15/16". Free lengths are cut to exactly 1½" to 12" with ends closed and ground square. They withstand maximum pressure from 400 to 2000 lbs.

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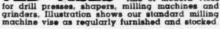


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Enco portable magnetic base light

A new portable magnetic base light is announced by Enco Manufacturing Co., 4524 W. Fullerton Ave., Chicago 39, Ill., which is said to be spectacular in its ability to solve lighting problems heretofore regarded as impossible.

Called the Enco Miti-Mite No. 250, this lighting unit holds up to a 100 watt standard incandescent bulb and attaches instantly with approximately a 100 lb. pull to curved or flat surfaces. An ingenious flexible ball-and-socket bracket construction permits absolute illumination of work wherever needed.

Attention is called to the importance of a magnetic base unit that can hold a full size standard lamp up to 100 watts. The lamp socket, made of aluminum is equipped with an adequate light shield, the outside of which is rayon-flocked a pleasing green to resist heat and protect the user's eyes. The switch is on the light socket. Six feet of 18-2 Neophyne oil-resistant cord with plug-in for standard outlets are

included with each set. The unit operates on 110 volts, a.c. or d.c.

The ball-and-socket bracket assembly has been designed to permit any

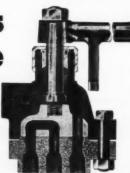


desired positioning. The ball stem swivel in a knurled nut which, by finger tightening, locks the bracket, thus permitting complete illumination dexterity.

Adopted by Leading Processor After Tests Show

Nicholson Valves Improve with Use

Nicholson control valves, after years of trying practically all makes, were recently adopted as standard by a well-known rubber company. Their capacity for longer leak-free service is confirmed by many installation records which show Nicholson valves actually become tighter with use. This is because their flat discs tend to lap themselves on the seats. For all mediums and types of operation. CATALOG 1250



117 Oregon St., Wilkes-Barre, Pa.

W.H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

The magnetic base holder is constructed of non-breakable molded plastic, 1¼" wide, 4" long and 1¾" high. Steel parrallel ribs provide magnetic contact surface on the bottom of the unit. Also on the bottom is the magnet release, helical design, which operates by a fingertip lever conveniently accessible. Because of the design of the bottom, the unit may be mounted securely to pipe, shaft or to the curved or flat surfaces of any ferrous material. The powerful magnet (new Duplex Type) will assure positive rigidity at all times.

Gay-Lee commutator undercutting milling machine

Gay-Lee Company, Clawson, Mich., has recently introduced its new, compact Commutator Undercutting Milling Machine, ruggedly designed and engineered for use with carbide tools. This unit is not to be confused with light equipment now on the market. It is particularly designed for high speed production applications.

Important physical features of the drive; lube fittings throughout.

new unit include a high speed Parker Majestic Spindle; heavy rugged cast iron frame; pre-loaded ball bearing table with tilt provisions for better



visibility; hardened and ground elevating screws; ½ h.p. motor with "V" drive; lube fittings throughout.



Lubricating wax for drawing and forming metal

A new lubricating wax for drawing and forming metal has been developed by S. C. Johnson & Son, Inc., Racine, Wis., manufacturers of industrial and household wax polishes and lubricants. This new compond, designated as No. 150, is a non-flammable, creamy, aqueous wax emulsion with a pH of 8.5 and a solid content of 23%. It spreads to a normal film thickness of .001" or less and is non-flowing. The wax is said to have excellent adhesion on all recommended metal surfaces. It drives completely in from seven to fifteen minutes, depending upon humidity and ventilation. The wax covers up to 2000 sq. ft. per gallon, undiluted; it may be diluted with from one to three parts of water, depending upon the severity of the draw.



The No. 150 Wax Lubricant is a universal drawing lubricant that is said to fit practically any draw in the shop. It performs equally well on drawing, stretch forming, bending, reducing, swaying, coining, etc. of aluminum and aluminum alloys, magnesium, and various types of steel including stainless.

The above picture shows a shaving of No. 4130 chrome moly steel cut with a Carboloy cutter. The maximum cut, using a high grade sulphonated cutting oil was .02". Using the Johnson Wax Coolant, the feed and speed were increased six times and the depth of cut 12½ times, to .25".

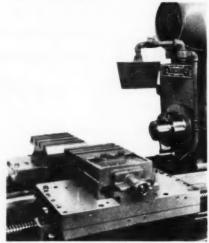
Although the No. 150 Wax Lubricant should be used on all jobs except brass and copper in place of conventional lubricants, it is especially re-

commended for deep, hot draws and on difficult drawing, cold heading and reducing operations with the tougher, more frictional metals.

Cam-operated rear cross slide for "Duomatic" lathes

A new cam-operated rear cross slide on the "Duomatic" lathe offers greatly increased rigidity for forming, grooving, and similar operations, according to the manufacturer, The Lodge & Shipley Company, 3071 Colerain Ave., Cincinnati, O.

Significant production increases are claimed for the new arrangement which replaces the former rack and pinion slide. Designed particularly for the operations noted, and not for turning, the new slide is considerably heavier, and effectively handles even the most difficult forming cuts. When turning with the rear slide is desired, a rack and pinion cross slide can be furnished at additional cost.



The cam, which feeds the slide into the workpiece, has been constructed as to move the slide inward at a constant rate. When the tools reach the end of the stroke, the inward feed "dies out" in the cam slot. Thus, the cam itself determines diametral accuracy with absolute uniformity.





Faster cutting with accuracy and safety—that means higher usable production. Get these results every time with the Triple-Chip Method and M. & M. segmental saw blades. Our "Hi-Lo" alternately wide-and-narrow tooth grind breaks up chip loads, disperses strains, minimizes breakage, hangs up new production records in cutting off large stock.

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THE MOTCH & MERRYWEATHER MACHINERY CO. PENTON BUILDING . CLEVELAND 13. OHIO

COMMAND OUR UNPARALLELED EXPERIENCE IN CIRCULAR SAWING

Locating device expedites machine set-ups

A new, multi-position locating device, said to be a major improvement in precision tool and die equipment, has been announced by the Queen City Machine Tool Company 235 E. Second St., Cincinnati 2, Ohio. Its name, Speedi-Spacer, indicates this machining accessory's purpose—the quick and accurate location of parts for drilling, boring or milling. Its use further permits jig boring or milling, without jigs

or fixtures.

With the Speedi-Spacer, any good upright drill or radial drill with an accurate spindle becomes a jig boring tool. In most instances, the device can be set up in a fraction of the time required on a jig borer or boring mill.

Positive positioning is provided by nine longitudinal and nine transverse positioning stop screws. Hardened measuring pads upon which these screws bear are an integral part of the unit. Longitudinal and traverse

WALTON TOOLS

TIME AND LABOR SERVES FOR MACHINE SHOPS AND INDUSTRY

The Walton Company has added Walton-American Tool Holders to its line of timeand labor-saving tools — the well known Walton Tap Extractor and its companion Reps Pipe and Stud Extractor.



WALTON TAP EXTRACTORS

Universally used for removing stubborn, balky taps that break off deep in threaded work. Quick, easy, inexpensive. Will not damage threads.

WALTON-AMERICAN TOOL HOLDERS

Many holders in one. Head will swivel around an entire circle. May be set for straight, right or left-hand offset positions. Will hold with perfect grip any size square or round tool bit or boring bar.





REPS PIPE AND STUD EXTRACTORS

When faced with broken pipes or stude that defy movement—here's the tool. Makes a strong, four-point grip without need for hammering or pounding. Hardened steel — will remove any material.

SEND FOR THIS NEW CATALOG OF WALTON TOOLS



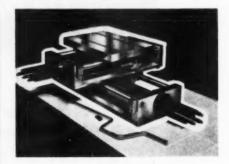
THE WALTON

Dept. 12, Hartford 10, Conn.

Please send your new catalog of Walton Tools with full details of free trial offer.

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Street	
Name	The the same of the state of th

movements are determined by the various settings of the screws; table position is maintained by positive locks.



The base plate of the unit has space for mounting screw holes to fit any machine tool. The working surfaces are provided with two standard %-inch T-slots. The thrust of drilling as well as the weight of the part being ma-chined is carried on Formica bearing blocks which ride on ground steel ways. With exceptional speed in set-up and elimination of costly jigs and fixtures, this unit is a satisfactory substitute for a jig borer in smaller plants, and supplements jig boring equipment in busy plants. Since the Speedi-Spacer does not become a permanent part of the machine with which it is used, it can be moved to other machines as needed, easily and quickly. It requires no auxiliary equipment outside of standard shop micrometers or vernier calipers.



DoAll instrument measures with light waves

The DoAll Company, 254 N. Laurel Ave., Des Plaines, Ill. announces a new monochromatic light with ten times the capacity of the previous model. The increasing trend toward finer tolerances in size, flatness and parallelism of production parts makes it necessary to use monochromatic light of greater intensity and size.

This new DoAll "Monolight" has all of the basic design features of the original Model, such as its general rectangular, compact shape, its in-built power unit and adjustable-position helium light, which can be raised, lowered, and turned 360°, to suit any

inspection job.

The new Monolight, illustrated, is a self-contained unit in a light, rigid, cast-aluminum body, having a 5" x 5\%" high-intensity helium tube light source providing 53-foot candle power on the testing stage. The standard stage is a 6-1/8" x 4-1/8" phenolic plate which can, at additional cost, be substituted



by a granite surface plate lapped to within one wave band of true flatness. Under the hinged work stage there is sufficient storage space for six 2" optical

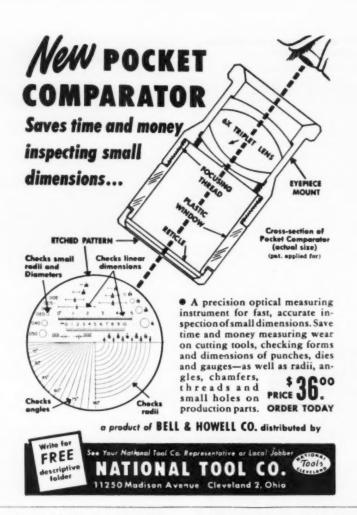


- More "Big Press" Features ... check 'em! Offering Vari-Speed in the Small Press Field
- Competitively Priced

You bet there's more quality... Kenco crankshafts are one-piece construction of alloy steel heattreated and precision ground. The clutch collar contains the clutch drive dog . . . this eliminates dog breakage. Self-locking wedge assures single or continuous trip-can't double trip. Extra-heavy balanced flywheel gives carry-through stroke on slow as well as high speeds. Adjustable V-belt sheave gives speed changes with one adjustment.

Heavy-duty, extra long V-type ram guides are hardened and ground. Has a wider frame. Its companion drive is pinned to flywheel and will shear off under excessive overload. Write for details on all 6 models of Kenco Power Presses.

KENCO MANUFACTURING CO 5211 Anaheim-Telegraph Rd., Los Angeles 22, Calif



flats or three each 3" or 4" flats. The power supply is a 7500-volt transformer operating on 110-120 volt 60 cycle a.c.

The helium tube light source provides accurate interference bands at .0000116" intervals, and when used with accurate optical flats, can be used to measure size, flatness and parallelism to within a few millionths of an inch. To inspect large areas or greater work heights, the head, or light source, may be turned 180°, giving the operator a large free working area.

Other specifications include a closed height of 9½", a width of 8", length 11¾". The maximum height stage to light is 9"; maximum height, table to light is 16".

Available accessories include a complete range of gage blocks and optical flats. DoAll optical flats are made in tolerances to suit any inspection work, and standard sizes are stocked in both round and square shapes, and may be had with one or two optically flat surfaces.



now with 12 position indexing

12 position indexing now makes possible the alignment with work at any thirty degree increment.

This is only one of the outstanding features developed by the first and largest manufacturer of turrets for small lathes. Other features include built-in cut-off tool and holder and positive rapid indexing. All wearing parts are hardened and precision fit. They are available in three sizes.

Switch to Crozier Tool Post Turrets today. Save as much as 75% set-up and down time. Model 31. for Logan, Atlas, Craftsman, South Bend, etc. \$30.80. Write for catalog.

CROZIER MACHINE TOOL CO.

Dept. MTB-3

Hawthorne, California

Reishauer automatic thread grinding machine

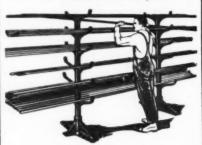
Cosa Corporation, 405 Lexington Ave., New York 17, N.Y., introduces the Reishauer Type RAG Automatic Thread Grinding Machine. This machine, made by the Reishauer Tool Works, Ltd., Zurich, Switzerland, grinds small and medium threads on straight or spiral fluted taps, micrometer spindles, worms, thread gauges, screws, studs, etc.

Designed for high speed production,

the machine operates on the longitudinal feed principle, employing a single thread grinding wheel. This method provides maximum accuracy for grinding small pitches. Down time is limited to changing the work pieces. The grinding wheel is trued automatically during the return stroke of the work table. Measuring time is eliminated, since the machine grinds to size. Only the wear of the truing diamond must be checked from time to time and adjusted by hand.

SPEEDS UP STOCK-ROOM SERVICE

The BROWN TIME-SAVING RACK saves the time previously lost end-hauling each bar of stock its entire length from the old-style, closed-side Rack, the Brown Rack requiring but a few inches of side movement. Each length, width and thickness of stock is displayed in gold-fish visibility for instant selection. Workmen waiting for stock are served without wase of time, and returned to their production machines to turn out a maximum of output.



Any time you require additional storage space, all you need do is to add more units. If you want to relocate it at any time, you can do so quickly for it is unattached to the building. It is a simple, durable article made of metal in five styles. It can't burn, warp, sag or twist: depreciation is practically nil.

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BROWN'S OUICK-SERVE RACKS

BROWN ENGINEERING CO.

126 N. THIRD ST. READING, PA.



grinding head, performs the movements for the feed and relief grinding. The head can be set in the helix angle. The longitudinal movement of the work piece corresponding to the desired pitch is accomplished by the table slide.

Gasoline engine driven arc welder

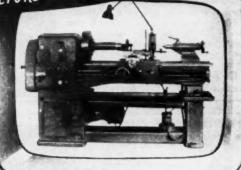
Hobart Brothers Company, Troy, Ohio, announces a new gasoline engine driven arc welder with the control panel mounted on the generator end of the unit. The control panel has been moved from the side to the end of the unit to centralize all controls for easier



MACHINE and TOOL BLUE BOOK



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adjustment of the welding heat. On the panel are located the generator controls, meters, welding and ground cable terminals, the polarity switch, the ignition switch, starter button, oil pressure gauge, and battery ammeter, as well as the receptacle for 1 KW auxiliary

The generator is of the symmetrical, 4-pole Multi-Range design. There are four laminated main poles and four interpoles which are removable. A patented single unit brush rigging holds the generator and exciter brushes in a fixed neutral position.

Control of the 1000 combinations of welding current and open circuit voltage is accomplished by the large wheel and Volt-Amp Adjuster (field rheostat) within the large wheel. The ten main

MAKE SET-UPS FASTER

Conserve valuable production time by using the fully universal, easily-operated MASTER MULTI-SWIVEL VISE for intricate, angular set-ups in your shop. 3 swivels instantly set any compound angle Used in shops throughout the world. Injerchangeable platen optional. Write for circular

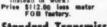
DONOVAN MFG. CO.

BO BATTERYMARCH ST. BOSTON, MASS.



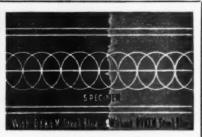


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- awitch Angle cutting by turn-ing saw. (Saw turns instead of work)





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Simply brush on, right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed lay-out lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

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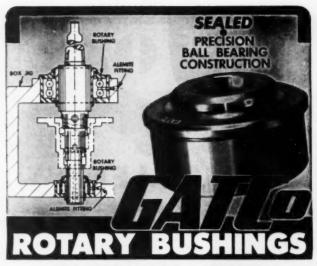


MATHISON DROP-FORGED SELF ALIGNING STRAP-CLAMP

Work pieces are held securely on machine tables, Work pieces are held securely on machine tables, face plates of lathe milling machines, boring mills, planer or punch presses and fixtures. Adjustable and self aligning to permit use on a wide variety of sizes and shapes. 5" Strap-Clamp holds work pieces up to 2" without blocking or shims. 8" size does same up to 3". Write today for full details.

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The inner race of the GATCO bushing rotates with the tool, piloting the tool accurately below or above the work—or both.

Eliminates expensive tool construction—Reduces tool wear—Prevents seizure and pilot breakage—Especially adapted where precision is required.

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steps or ranges are selected by means of a copper switch, moulded in bakelite, operated by the large hand wheel. The volt-amp adjuster provides 100 steps of fine adjustment in each of the ten main ranges.

Prompt building up of voltage, and freedom from accidental polarity reversal are assured by a special oversize, inbuilt, 4-pole exciter. This exciter is large enough to supply d.c. current in excess of that required to excite the welding generator and this excess power can be used to operate lights

The generator is powered by a Chrysler Industrial Engine and includes a standard battery type ignition, charger and starting motor. Engine speed is controlled by a constant speed fly-ball type governor, operated by a V-belt from separate pulley on the engine crank shaft. An idling device is provided to slow the engine down when the arc is broken and bring it up to operating speed when the arc is started. A mercury type time delay switch allows sufficient time to change electrodes without slowing down the engine.



SPS adjustable shop stools

A new knock-down shop stool, adjustable in three sizes to 15 positions is being made by Standard Pressed Steel Co., Jenkintown, Pa. The stool has a welded seat assembly, double-angle leg construction for strength and an automatic nut-locking feature.

One size is adjustable from 18" up to 22", a second from 23" to 27" and the third from 28" to 32", all by one-inch increments. The adjustable can be made simply with four small bolts.

Because the tools are shipped knocked down in comparatively small cartons (see the left-hand side of the illustration), the entire line can be stored in quantity by the distributor in little space. Manufacturing firms will find the knock-down feature an added advantage in storing, shifting departments, or shipping equipment from one plant to another. Three times as many packed knock-downs can be shipped in a freight car as unboxed conventional stools according to the manufacturer.

The SPS Hallowell knock-down stool,

finished in olive green, is assembled with eight small bolts. Four bolts fasten the legs to the seat assembly and four lock a square frame bracket to the four legs.

The double-angle construction automatically keeps the nuts tight on the bolts and the stool rigid. The two angles in the leg, for instance, are slightly larger than the two into which they are clamped by bolt and nut in the seat

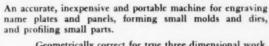


assembly. As the bolt is drawn up tight, a constant pulling action is exerted on the nut, keeping it locked in place.

The steel seat, 14" in diameter, can be had with masonite top. The stool

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Geometrically correct for true three dimensional work. Accurately duplicates master copy in metals, plastics or wood. Rugged, sturdy construction.

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18 Trowbridge St.

Cambridge, Mass.

comes equipped with pressed-in glides at the ends of the legs. Rubber tips can be furnished as well as a back which is adjustable for height and for angle.

New size range for Tyson anti friction bearings

The Tyson Bearing Corporation, 1316 Oberlin Road, Massillon, Ohio, has announced the addition of a new size range in their standard line of full roll



type tapered antifriction one, two and four-row bearings. Single row bearings are available in sizes from 2" to 20" o.d., two-row bearings from 4" to 20" o.d., and four-row bearings from 6" to 20" o.d. These new full-roll units have been engineered for use in rod, bar and strip mills, pinion stands, gear drives, reels, straighteners and other heavy metal-working machinery. By speeding roll changes, decreasing power consumption, reducing lubrication and maintenance costs and increasing general overall efficiency, they prove their superiority for heavy duty service, according to Tyson engineers.

The four-roll bearing shown, measures 10½" i.d., 15¾" o.d. and 10" wide. This bearing is manufactured to A.F.B.M.A. standards, with the bore held to 0.001" and the o.d. to 0.002" tolerance, and is made entirely of high quality Krupp chrome-nickel steel. At 500 r.p.m., it has a 126,000-pound radial capacity and 24.250-pound thrust.

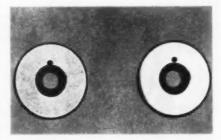
Tyson full-roll tapered roller bearings are stated to provide the maximum number of rolls of greatest capacity, rigidity and service life. The distribution of the load over a full complement of tapered rolls assures smooth operation at full radial and thrust capacities.

New compound expedites barrel finishing of alloy steel

A special-purpose chemical compound for barrel finishing alloy steel parts in minimum time has been introduced by Blue Magic Chemical Specialties Co., 2135 Margaret St., Philadelphia 24, Pa. is offered under the trade name Blue Magic Steel Finishing Compound No. C-5.

The manufacturer states that with C-5 Compound, and any generally used tumbling medium, bright mirror finishes can be put on steel parts in cycles of from 20 to 40 minutes. The compound can be used in certain applications for both roughing and finishing, to produce low micro-inch surface readings, true color and uniform results.

The illustration shows a steel washer before and after burnishing for two hours with five oz. of Blue Magic Compound C-5 and 100 lbs. of Alundum Tumbling Abrasive No. 6-T, with the water level 2" above the mass. The micro-inch reading was reduced from 40 to 5.



Blue Magic Compound No. C-5 is a non-dusting, soapy, concentrated powder that has no unpleasant odor and is not irritating to the skin. It



Chicago "Safety Plus" Screws are designed to give you a tighter, lower cost fastening for any heavy duty purpose. To speed delivery time, call the INDUSTRIAL SUPPLY DISTRIBUTOR nearest you today. Ask for Chicago and get "Safety Plus."

CHICAGO SCREW COMPANY

is said that detergency and rinsibility are outstanding characteristics and that parts leave the tumbling barrel free from chips, abrasives, oil traces or any other foreign matter that might impair subsequent plating, painting or other operations. The manufacturer will make test runs on samples submitted or supply sufficient compounds for experimental runs.

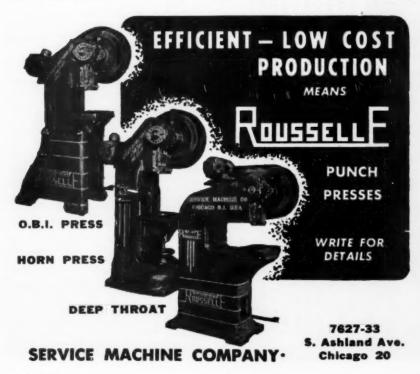
Everede turret lathe tool holders

A new boring bar tool holder, made exclusively for use on turret lathes, has been introduced by Everede Tool Co., 2000-PR N. Parkside Ave., Chicago 30, Ill. Practical applications, says the manufacturer, already proven in some of the country's biggest plants have resulted in a brisk demand for the item.

EveredE turret lathe tool holders, by



means of an eccentric barrel wihch can be clamped quickly into the exact desired position, provide for quick, easy adjustment for centering of the boring bar. This eccentric barrel firmly maintains its precision setting, and always keeps the boring bar truly horizontal





You can convert your lathe to handle profitable turret lathe and screw machine work by installing a self-indexing Newton Precision Bed Turret. All production operations can be performed, plus operations normally done with the regular tailstock. \$\frac{\gamma}{\gamma}\in \text{It's designed for fast, heavy duty operation, accommodates six tools and offers precise repeating accuracy. The slide and bed have ground bearing surfaces to assure stroke accuracy. \$\frac{\gamma}{\gamma}\in \text{Investigate the profitable opportunities offered by a Self-Indexing Newton Precision Bed Turret. Available in lever-operated or pilot wheel models for the following lathes: 10" and 11" Logan, 10" Powr-Kraft, 10" Atlas, and 12" Craftsman. \$\frac{\gamma}{\gamma}\in \text{Favorable delivery dates. Ask your dealer for information or write direct.

regardless of the size of lathe used, within specified limits.

Adaptable to various-sized lathes, the holder also does away with the necessity of shimming or "home-made" improvising or grinding-down of bars. Supplied with bushings, the holder accommodates various sizes of straight shank boring bars, including the EveredE boring bars that utilize exclusively high speed steel or solid carbide triangular shape-tool bits.

Quick-setting compound for fastening anchor bolts

.........

2029 Blake Avenue . Los Angeles 39, California

COMPANY

Anchor bolts for permanently fastening machinery, hand rails, or equipment of any type to concrete, can now be set easily, quickly and with complete safety by using Por-Rok Quick Setting Cement, a recent development of The Hallemite Manufacturing Co., 2446 W. 25th St., Cleveland 13. Ohio.

Por-Rok successfully replaces critical lead and sulphur for most bolt-setting operations. Applied cold, there is no heating hazard—and the speed with which the compound forms a permanent weld-joint is said to be amazing.



Por-Rok is extremely simple to employ. The user merely drills the hole, sets the bolt in place, mixes Por-Rok with water, and pours it into the opening around the bolt. Within 15 to 30 minutes, the bolt is anchored permanently. Por-Rok is self-bonding, self-levelling, oil resistant, and will not shrink. It has the remarkable compression strength of 4500 lbs. p.s.i., verified by an independent testing laboratory.

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Automatic adjustment speeds up production in multiple operations with push-out type HALL COLLET CHUCKS. Full spindle capacity or over.

Tremendous grip over or under stock size to .007-without adjustments. All grip ...no slip. No bearings...no heat or lost power. Instant release without stopping lathe.

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Made in Two Sizes to Fit Your Requirements:

Model A... 1" (max. capacity 1-1/16")

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Round, square or hexagon collets, plain or serrated
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VIKING INDUSTRIES 220 MONTAGUE STREET . ROCKFORD, ILLINOIS

Press feed for coiled stock

An automatic hitch-type press feed for mounting on the die set or bolster plate is announced by Jaco Devices, Inc., 92 High St., Hingham, Mass. The tool is cam-operated but it does not rely on the cam to obtain or maintain accuracy of pitch.

As its name implies, the Jaco Grip-O-Matic Feed grips the stock firmly under spring pressure while being fed into the press tool, but at a predetermined point before the die starts to work the material, its gripper releases and the stock is free to float in response to die pilots or the metal flow requirement of forming operations. Slippage due to stock inertia is controlled, and consequently the accuracy of pitch can be maintained. On the return stroke, the gripper remains open, thus insuring a minimum of wear on the gripper blade and freedom from surface scratches on stock with polished finish.

The Grip-O-Matic Feed will operate from any side of the die set to which the cam is attached, and will feed the stock on either the "up" or "down" stroke of the punch press ram. A ratio of 2:1 exists between the distance the stock travels and the lateral movement of the cam roller, consequently, a feed length of 2" can be obtained on a punch press having only a 1" stroke. The tool



will feed any thickness of coiled stock up to 3/32" by 2" wide, and transmit a maximum feed length of 2½" from zero movement in an infinite number of pitches.

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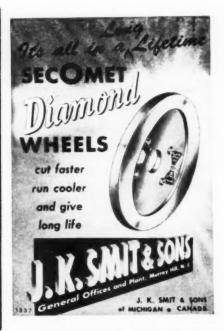
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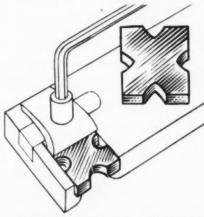
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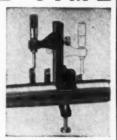
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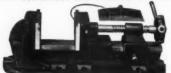
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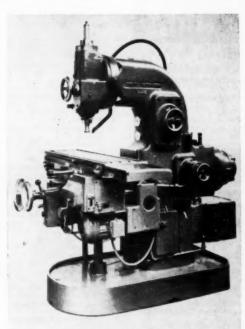




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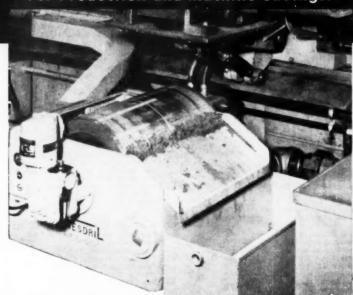
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2-1/2"	3/64"	7/8"	2.52
2-1/2"	1/16"	7/8"	2.52
2-1/2"	3/32"	7/8"	2.52
2-1/2"	1/8"	7/8"	2.61
Diameter	Thickness	Hole	Price
3"	1/32"	1"	\$2.97
3"	3/64"	1"	2.97
3"	1/16"	1"	3.06
3"	5/64"	1"	3.40
3"	3/32"	1"	3.06
3"	7/64"	1"	3.50
3"	1/8"	1"	3.15
3"	5/32"	1"	3.70
3"	3/16"	1"	3.80
Diameter	Thickness	Hole	Price
3-1/2"	1/32"	1"	\$3.87
3-1/2"	3/64"	1"	3.96
3-1/2"	1/16"	1"	4.05
3-1/2"	5/64"	1"	4.23
3-1/2"	3/32"	1"	4.23
3-1/2"	7/64"	1"	4.50
3-1/2"	1/8"	1"	4.50
3-1/2"	5/32"	1"	4.68
3-1/2"	3/16"	1"	4.95

		. 44	
Diameter	Thickness	Hole	Price
4"	1/32"	1"	\$3.87
4"	3/64"	1"	3.96
4"	1/16"	1"	4.05
4"	5/64"	1"	4.70
4"	3/32"	1"	4.23
4"	7/64"	1"	5.00
4"	1/8"	1"	4.50
4"	5/32"	1"	4.68
4"	3/16"	1"	4.95
Diameter	Thickness	Hole	Price
5"	1/16"	1"	\$5.22
5"	3/32"	1"	5.67
5"	1/8"	1"	5.94
5"	5/32"	1"	6.30
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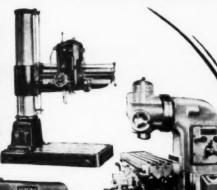
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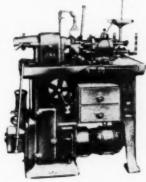
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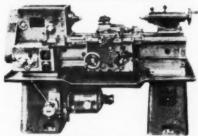
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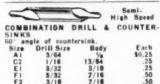
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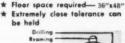
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